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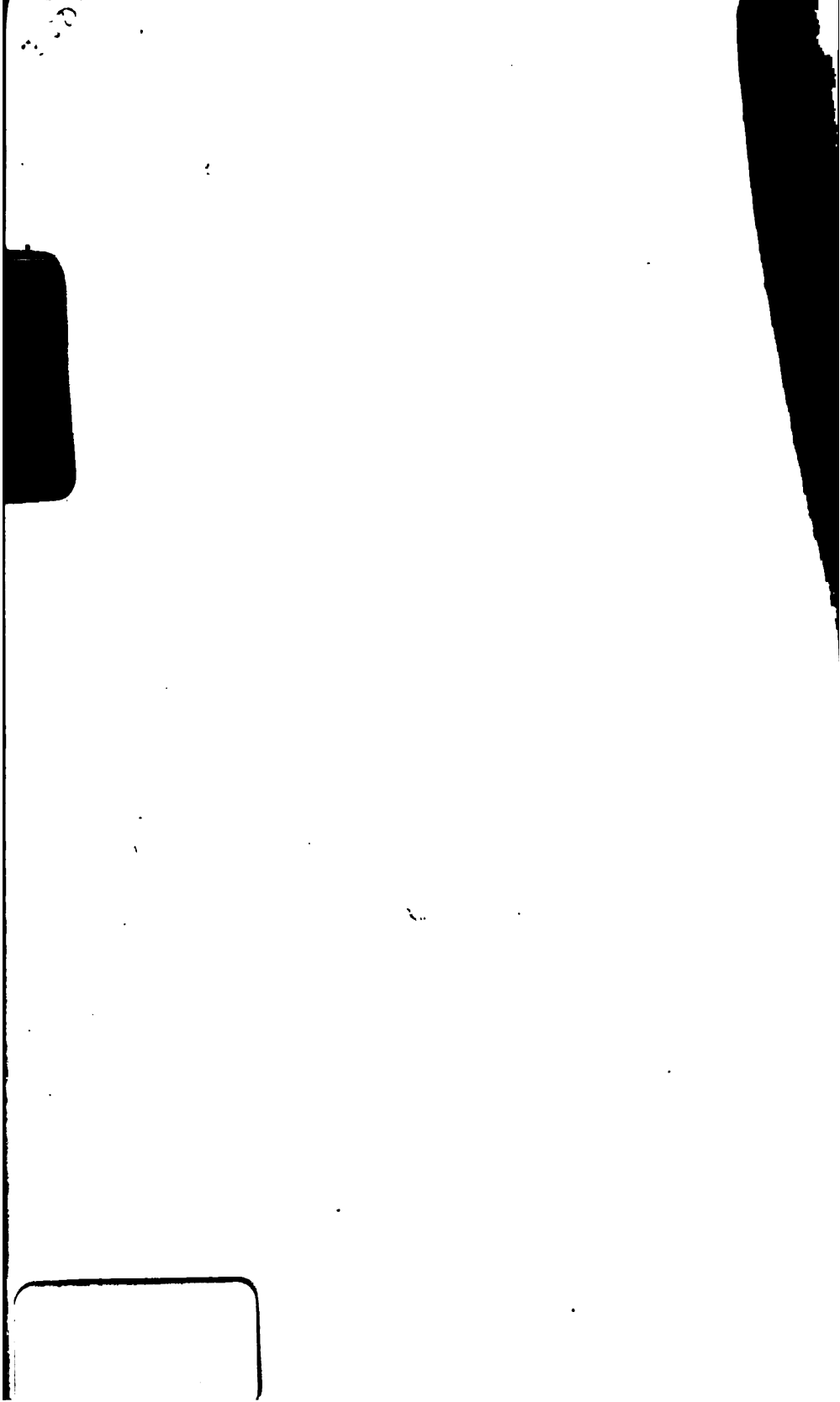
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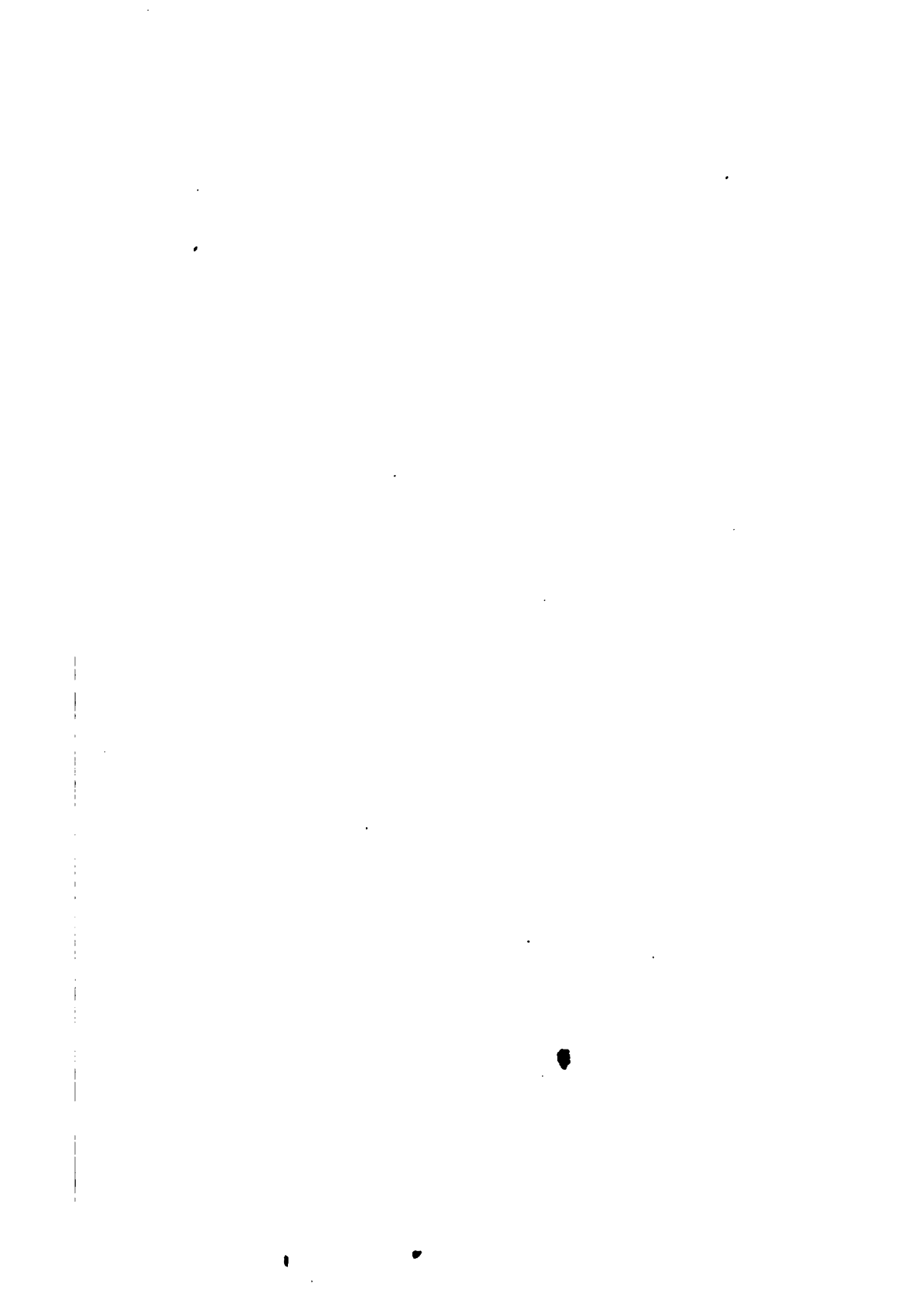






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# MESSAGE

FROM THE

PRESIDENT OF THE UNITED STATES

TO THE

TWO HOUSES OF CONGRESS

AT THE COMMENCEMENT OF THE

SECOND SESSION OF THE FORTY-SIXTH CONGRESS,

WITH THE

REPORTS OF THE HEADS OF DEPARTMENTS

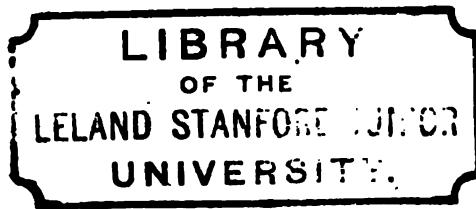
AND

SELECTIONS FROM ACCOMPANYING DOCUMENTS.

EDITED BY

BEN: PERLEY POORE.

WASHINGTON:  
GOVERNMENT PRINTING OFFICE,  
1879.



A. 8079

Prepared in accordance with the provisions of the Revised Statutes, approved June 23, 1874.

SEC. 75. The Joint Committee on Public Printing shall appoint a competent person, who shall edit such portion of the documents accompanying the annual reports of the Departments as they may deem suitable for popular distribution, and prepare an alphabetical index thereto.

SEC. 196. The head of each Department, except the Department of Justice, shall furnish to the Congressional Printer copies of the documents usually accompanying his annual report on or before the first day of November in each year, and a copy of his annual report on or before the third Monday of November in each year.

SEC. 3798. Of the documents named in this section there shall be printed and bound, in addition to the usual number for Congress, the following numbers of copies, namely:

Second. Of the President's message, the annual reports of the Executive Departments, and the abridgment of accompanying documents, unless otherwise ordered by either house, ten thousand copies for the use of the members of the Senate and twenty-five thousand copies for the use of the members of the House of Representatives.

# MESSAGE

OF

## THE PRESIDENT OF THE UNITED STATES.

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*Fellow-Citizens of the Senate and House of Representatives :*

The members of the Forty-sixth Congress have assembled in their first regular session under circumstances calling for mutual congratulation and grateful acknowledgment to the Giver of all good for the large and unusual measure of national prosperity which we now enjoy.

The most interesting events which have occurred in our public affairs since my last annual message to Congress are connected with the financial operations of the government directly affecting the business interests of the country. I congratulate Congress on the successful execution of the resumption act. At the time fixed, and in the manner contemplated by law, United States notes began to be redeemed in coin. Since the 1st of January last they have been promptly redeemed on presentation, and in all business transactions, public and private, in all parts of the country, they are received and paid out as the equivalent of coin. The demand upon the Treasury for gold and silver in exchange for United States notes has been comparatively small, and the voluntary deposit of coin and bullion in exchange for notes has been very large. The excess of the precious metals deposited or exchanged for United States notes over the amount of United States notes redeemed is about \$10,000,000.

The resumption of specie payments has been followed by a very great revival of business. With a currency equivalent in value to the money of the commercial world, we are enabled to enter upon an equal competition with other nations in trade and production. The increasing foreign demand for our manufactures and agricultural products has caused a large balance of trade in our favor, which has been paid in gold, from the 1st of July last to November 15, to the amount of about \$59,000,000. Since the resumption of specie payments there has also been a marked and gratifying improvement of the public credit. The bonds of the government bearing only 4 per cent. interest have been sold at or above par, sufficient in amount to pay off all of the national debt which was redeemable under present laws. The amount of interest saved annually by the process of refunding the debt, since March 1, 1877, is \$14,297,177. The bonds sold were largely in small sums, and the number of our citizens now holding the public securities is much greater than ever before. The amount of the national debt which matures within less than two years is \$792,121,700, of which \$500,000,000 bear interest at the rate of 5 per cent., and the balance is in bonds bear-

ing 6 per cent. interest. It is believed that this part of the public debt can be refunded by the issue of 4 per cent. bonds, and, by the reduction of interest which will thus be effected, about eleven millions of dollars can be annually saved to the Treasury. To secure this important reduction of interest to be paid by the United States, further legislation is required, which, it is hoped, will be provided by Congress during its present session.

The coinage of gold by the mints of the United States during the last fiscal year was \$40,986,912. The coinage of silver dollars, since the passage of the act for that purpose, up to November 1, 1879, was \$45,000,850, of which \$12,700,344 have been issued from the Treasury and are now in circulation, and \$32,300,506 are still in the possession of the government.

The pendency of the proposition for unity of action between the United States and the principal commercial nations of Europe, to effect a permanent system for the equality of gold and silver in the recognized money of the world, leads me to recommend that Congress refrain from new legislation on the general subject. The great revival of trade, internal and foreign, will supply during the coming year its own instructions, which may well be awaited before attempting further experimental measures with the coinage. I would, however, strongly urge upon Congress the importance of authorizing the Secretary of the Treasury to suspend the coinage of silver dollars upon the present legal ratio. The market value of the silver dollar being uniformly and largely less than the market value of the gold dollar, it is obviously impracticable to maintain them at par with each other if both are coined without limit. If the cheaper coin is forced into circulation it will, if coined without limit, soon become the sole standard of value, and thus defeat the desired object, which is a currency of both gold and silver, which shall be of equivalent value, dollar for dollar, with the universally recognized money of the world.

The retirement from circulation of United States notes, with the capacity of legal-tender in private contracts, is a step to be taken in our progress towards a safe and stable currency, which should be accepted as the policy and duty of the government, and the interest and security of the people. It is my firm conviction that the issue of legal-tender paper money based wholly upon the authority and credit of the government, except in extreme emergency, is without warrant in the Constitution, and a violation of sound financial principles. The issue of United States notes during the late civil war with the capacity of legal-tender between private individuals was not authorized except as a means of rescuing the country from imminent peril. The circulation of these notes as paper money, for any protracted period of time after the accomplishment of this purpose, was not contemplated by the framers of the law under which they were issued. They anticipated the redemption and withdrawal of these notes at the earliest practicable period



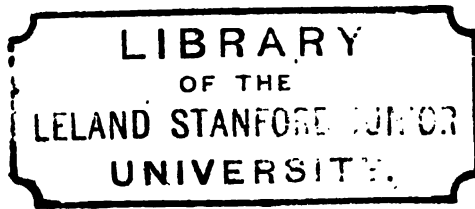
consistent with the attainment of the object for which they were provided.

The policy of the United States, steadily adhered to from the adoption of the Constitution, has been to avoid the creation of a national debt, and when, from necessity in time of war, debts have been created, they have been paid off on the return of peace as rapidly as possible. With this view, and for this purpose, it is recommended that the existing laws for the accumulation of a sinking-fund sufficient to extinguish the public debt within a limited period be maintained. If any change of the objects or rates of taxation is deemed necessary by Congress, it is suggested that experience has shown that a duty can be placed on tea and coffee, which will not enhance the price of those articles to the consumer, and which will add several millions of dollars annually to the Treasury.

The continued deliberate violation by a large number of the prominent and influential citizens of the Territory of Utah of the laws of the United States for the prosecution and punishment of polygamy demands the attention of every department of the government. This Territory has a population sufficient to entitle it to admission as a State, and the general interests of the nation, as well as the welfare of the citizens of the Territory, require its advance from the Territorial form of government to the responsibilities and privileges of a State. This important change will not, however, be approved by the country while the citizens of Utah in very considerable number uphold a practice which is condemned as a crime by the laws of all civilized communities throughout the world.

The law for the suppression of this offense was enacted with great unanimity by Congress more than seventeen years ago, but has remained until recently a dead letter in the Territory of Utah, because of the peculiar difficulties attending its enforcement. The opinion widely prevailed among the citizens of Utah that the law was in contravention of the Constitutional guarantee of religious freedom. This objection is now removed. The Supreme Court of the United States has decided the law to be within the legislative power of Congress, and binding as a rule of action for all who reside within the Territories. There is no longer any reason for delay or hesitation in its enforcement. It should be firmly and effectively executed. If not sufficiently stringent in its provisions it should be amended; and, in aid of the purpose in view, I recommend that more comprehensive and more searching methods for preventing as well as punishing this crime be provided. If necessary to secure obedience to the law, the enjoyment and exercise of the rights and privileges of citizenship in the Territories of the United States may be withheld or withdrawn from those who violate or oppose the enforcement of the law on this subject.

The elections of the past year, though occupied only with State officers, have not failed to elicit in the political discussions which attended them all over the country new and decisive evidence of the deep interest which the great body of citizens take in the progress of the country



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for the compensation or the expenses of the commission, has been postponed until the present time. It is herewith transmitted to Congress.

While the reform measures of another government are of no authority for us, they are entitled to influence to the extent to which their intrinsic wisdom and their adaptation to our institutions and social life may commend them to our consideration. The views I have heretofore expressed concerning the defects and abuses in our civil administration remain unchanged, except in so far as an enlarged experience has deepened my sense of the duty both of officers and of the people themselves to co-operate for their removal. The grave evils and perils of a partisan-spoils system of appointment to office and of office tenure are now generally recognized. In the resolutions of the great parties, in the reports of departments, in the debates and proceedings of Congress, in the messages of executives, the gravity of these evils has been pointed out and the need of their reform has been admitted.

To command the necessary support, every measure of reform must be based on common right and justice, and must be compatible with the healthy existence of great parties, which are inevitable and essential in a free State.

When the people have approved a policy at a national election, confidence on the part of the officers they have selected and of the advisers who, in accordance with our political institutions, should be consulted in the policy which it is their duty to carry into effect, is indispensable. It is eminently proper that they should explain it before the people, as well as illustrate its spirit in the performance of their official duties.

Very different considerations apply to the greater number of those who fill the subordinate places in the civil service. Their responsibility is to their superiors in official position. It is their duty to obey the legal instructions of those upon whom that authority is devolved, and their best public service consists in the discharge of their functions, irrespective of partisan politics. Their duties are the same, whatever party is in power and whatever policy prevails. As a consequence, it follows that their tenure of office should not depend on the prevalence of any policy or the supremacy of any party, but should be determined by their capacity to serve the people most usefully quite irrespective of partisan interests. The same considerations that should govern the tenure should also prevail in the appointment, discipline, and removal of these subordinates. The authority of appointment and removal is not a perquisite, which may be used to aid a friend or reward a partisan, but is a trust, to be exercised in the public interest under all the sanctions which attend the obligation to apply the public funds only for public purposes.

Every citizen has an equal right to the honor and profit of entering the public service of his country. The only just ground of discrimination is the measure of character and capacity he has to make that service most useful to the people. Except in cases where, upon just and recognized

towards a more general and complete establishment, at whatever cost, of universal security and freedom in the exercise of the elective franchise. While many topics of political concern demand great attention from our people, both in the sphere of national and State authority, I find no reason to qualify the opinion I expressed in my last annual message, that no temporary or administrative interests of government, however urgent or weighty, will ever displace the zeal of our people in defense of the primary rights of citizenship, and that the power of public opinion will override all political prejudices, and all sectional and State attachments, in demanding that all over our wide territory the name and character of citizen of the United States shall mean one and the same thing, and carry with them unchallenged security and respect. I earnestly appeal to the intelligence and patriotism of all good citizens of every part of the country, however much they may be divided in opinions on other political subjects, to unite in compelling obedience to existing laws aimed at the protection of the right of suffrage. I respectfully urge upon Congress to supply any defects in these laws which experience has shown and which it is within its power to remedy. I again invoke the co-operation of the executive and legislative authorities of the States in this great purpose. I am fully convinced that if the public mind can be set at rest on this paramount question of popular rights no serious obstacle will thwart or delay the complete pacification of the country or retard the general diffusion of prosperity.

In a former message I invited the attention of Congress to the subject of the reformation of the civil service of the government, and expressed the intention of transmitting to Congress as early as practicable a report upon this subject by the chairman of the civil-service commission.

In view of the facts that, during a considerable period, the Government of Great Britain has been dealing with administrative problems and abuses in various particulars analogous to those presented in this country, and that in recent years the measures adopted were understood to have been effective and in every respect highly satisfactory, I thought it desirable to have fuller information upon the subject, and accordingly requested the chairman of the civil-service commission to make a thorough investigation for this purpose. The result has been an elaborate and comprehensive report.

The report sets forth the history of the partisan-spoils system in Great Britain, and of the rise and fall of the parliamentary patronage, and of official interference with the freedom of elections. It shows that after long trials of various kinds of examinations those which are competitive and open on equal terms to all, and which are carried on under the superintendence of a single commission, have, with great advantage, been established as conditions of admission to almost every official place in the subordinate administration of that country and of British India. The completion of the report, owing to the extent of the labor involved in its preparation and the omission of Congress to make any provision either

# ANNUAL MESSAGE OF THE PRESIDENT.

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Every citizen has an equal right to the honor and profit of entering the public service of his country. The only just ground of discrimination is the measure of character and capacity he has to make that service most useful to the people. Except in cases where, upon just and recognized

principles—as upon the theory of pensions—offices and promotions are bestowed as rewards for past services, their bestowal upon any theory which disregards personal merit, is an act of injustice to the citizen, as well as a breach of that trust subject to which the appointing power is held.

In the light of these principles, it becomes of great importance to provide just and adequate means, especially for every department and large administrative office, where personal discrimination on the part of its head is not practicable, for ascertaining those qualifications to which appointments and removals should have reference. To fail to provide such means is not only to deny the opportunity of ascertaining the facts upon which the most righteous claim to office depends, but, of necessity to discourage all worthy aspirants by handing over appointments and removals to mere influence and favoritism. If it is the right of the worthiest claimant to gain the appointment, and the interest of the people to bestow it upon him, it would seem clear that a wise and just method of ascertaining personal fitness for office must be an important and permanent function of every just and wise government. It has long since become impossible, in the great offices, for those having the duty of nomination and appointment, to personally examine into the individual qualifications of more than a small proportion of those seeking office and, with the enlargement of the civil service, that proportion must continue to become less.

In the earlier years of the government, the subordinate offices were so few in number that it was quite easy for those making appointments and promotions to personally ascertain the merits of candidates. Party managers and methods had not then become powerful agencies of coercion, hostile to the free and just exercise of the appointing power.

A large and responsible part of the duty of restoring the civil service to the desired purity and efficiency rests upon the President, and it is my purpose to do what is within my power to advance such prudent and gradual measures of reform as will most surely and rapidly bring about that radical change of system essential to make our administrative methods satisfactory to a free and intelligent people. By a proper exercise of authority, it is in the power of the Executive to do much to promote such a reform. But it cannot be too clearly understood that nothing adequate can be accomplished without co-operation on the part of Congress and considerate and intelligent support among the people. Reforms which challenge the generally accepted theories of parties, and demand changes in the methods of departments, are not the work of a day. Their permanent foundations must be laid in sound principles and in an experience which demonstrates their wisdom and exposes the errors of their adversaries. Every worthy officer desires to make his official action a gain and an honor to his country, but the people themselves, far more than their officers in public station, are interested in a pure, economical, and vigorous administration.



## ANNUAL MESSAGE OF THE PRESIDENT.

By laws enacted in 1853 and 1855, and now in substance incorporated in the Revised Statutes, the practice of arbitrary appointments in several subordinate grades in the great departments was controlled, and examinations as to capacity, to be conducted by departmental examiners, were provided for and made conditions of admission to the public service. These statutes are a decision by Congress that examinations of some sort as to attainments and capacity are essential to the well-being of the public service. The important question in the enactment of these laws have been as to the character of the examinations, and whether official favor and partisan influence, or right and merit, were to control the access to the examination. If, in fact, these examinations have not always been open to workmen generally, who might wish to be examined. Official favoritism and partisan influence, as a rule, appear to have designated those who were permitted to go before the examining boards, subjecting the examiners to a pressure from the friends of the candidates to resist. As a consequence, the standard of admission fell far below which the public interest demanded. It was also almost entirely a system which provided for various separate boards of examination with no common supervision or uniform method of procedure, resulting in confusion, inconsistency, and inadequate tests of capacity, so detrimental to the public interests. A further and more radical reform was obviously required.

In the annual message of December, 1870, my predecessor stated that "there is no duty which so much embarrasses the heads of departments as that of appointments; nor is there so arduous and thankless labor imposed on Senators and Representatives as that of finding places for constituents. The present system does not secure the best men, and often not even fit men for the public service of the government. The elevation and purification of the civil service of the government has been hailed with approval by the whole people of the United States. Congress, accordingly, passed the act approved March 3, 1871, which created the civil service of the United States and promoted the efficiency of the service by giving the necessary authority to the Executive to inaugurate a service reform.

Acting under this statute, which was interpreted as intended to create a system of just and effectual examinations under uniform rules, a number of eminently competent persons were selected to examine those who entered with zeal upon the discharge of their duties. These persons, an intelligent appreciation of the requirements of the service, and took charge of the examination of the candidates. Their capacity as a board, have been known as the "Civil Service Commission." Congress for two years appropriated the necessary compensation and for the expense of carrying on the commission.

It appears from the report of the commission, submitted

dent in April, 1874, that examinations had been held in various sections of the country, and that an appropriation of about \$25,000 would be required to meet the annual expenses, including salaries, involved in discharging the duties of the commission. The report was transmitted to Congress by special message of April 19, 1874, with the following favorable comment upon the labors of the commission: "If sustained by Congress, I have no doubt the rules can, after the experience gained, be so improved and enforced as to still more materially benefit the public service and relieve the Executive, members of Congress, and the heads of departments from influences prejudicial to good administration. The rules, as they have hitherto been enforced, have resulted beneficially, as is shown by the opinions of the members of the Cabinet and their subordinates in the departments, and in that opinion I concur." And in the annual message of December of the same year similar views are expressed, and an appropriation for continuing the work of the commission again advised.

The appropriation was not made, and, as a consequence, the active work of the commission was suspended, leaving the commission itself still in existence. Without the means, therefore, of causing qualifications to be tested in any systematic manner, or of securing for the public service the advantages of competition upon any extensive plan, I recommended in my annual message of December, 1877, the making of an appropriation for the resumption of the work of the commission.

In the mean time, however, competitive examinations under many embarrassments have been conducted within limited spheres in the Executive Departments in Washington and in a number of the custom-houses and post-offices of the principal cities of the country, with a view to further test their effects, and in every instance they have been found to be as salutary as they are stated to have been under the administration of my predecessor. I think the economy, purity, and efficiency of the public service would be greatly promoted by their systematic introduction, wherever practicable, throughout the entire civil service of the government, together with ample provision for their general supervision, in order to secure consistency and uniform justice.

Reports from the Secretary of the Interior, from the Postmaster-General, from the postmaster in the city of New York, where such examinations have been some time on trial, and also from the collector of the port, the naval officer, and the surveyor in that city, and from the postmasters and collectors in several of the other large cities, show that the competitive system, where applied, has in various ways contributed to improve the public service.

The reports show that the results have been salutary in a marked degree, and that the general application of similar rules cannot fail to be of decided benefit to the service.

The reports of the government officers, in the city of New York especially, bear decided testimony to the utility of open competitive exam-

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mations in their respective offices, showing that "these examinations, and the excellent qualifications of those admitted to the service through them, have had a marked incidental effect upon the persons previously in the service, and particularly upon those aspiring to promotion. There has been, on the part of these latter, an increased interest in the work, and a desire to extend acquaintance with it beyond the particular desk occupied, and thus the morale of the entire force has been raised. . . . The examinations have been attended by many citizens, who have had an opportunity to thoroughly investigate the scope and character of the tests and the method of determining the results, and those visitors have, without exception, approved the methods employed, and several of them have publicly attested their favorable opinion."

Upon such considerations, I deem it my duty to renew the recommendation contained in my annual message of December, 1877, requesting Congress to make the necessary appropriation for the resumption of the work of the Civil-Service Commission. Economy will be promoted by authorizing a moderate compensation to persons in the public service who may perform extra labor upon or under the commission, as the Executive may direct.

I am convinced that if a just and adequate test of merit is enforced for admission to the public service and in making promotions, such abuses as removals without good cause and partisan and official interference with the proper exercise of the appointing power will in large measure disappear.

There are other administrative abuses to which the attention of Congress should be asked in this connection. Mere partisan appointments and the constant peril of removal without cause very naturally lead to an absorbing and mischievous political activity on the part of those thus appointed, which not only interferes with the due discharge of official duty, but is incompatible with the freedom of elections. Not without warrant, in the views of several of my predecessors in the Presidential office, and directly within the law of 1871, already cited, I endeavored, by regulation, made on the 22d day of June, 1877, to put some reasonable limits to such abuses. It may not be easy, and it may never perhaps be necessary, to define with precision the proper limit of political action on the part of Federal officers.

But while their right to hold and freely express their opinions cannot be questioned, it is very plain that they should neither be allowed to devote to other subjects the time needed for the proper discharge of their official duties, nor to use the authority of their office to enforce their own opinions or to coerce the political action of those who hold different opinions.

Reasons of justice and public policy, quite analogous to those which forbid the use of official power for the oppression of the private citizen, impose upon the government the duty of protecting its officers and agents from arbitrary exactions. In whatever aspect considered, the practice of making levies, for party purposes, upon the salaries of officers

is highly demoralizing to the public service and discreditable to the country. Though an officer should be as free as any other citizen to give his own money in aid of his opinions or his party, he should also be as free as any other citizen to refuse to make such gifts. If salaries are but a fair compensation for the time and labor of the officer, it is gross injustice to levy a tax upon them. If they are made excessive, in order that they may bear the tax, the excess is an indirect robbery of the public funds.

I recommend, therefore, such a revision and extension of present statutes as shall secure to those in every grade of official life or public employment the protection with which a great and enlightened nation should guard those who are faithful in its service.

Our relations with foreign countries have continued peaceful.

With Great Britain there are still unsettled questions, growing out of the local laws of the maritime provinces and the action of provincial authorities deemed to be in derogation of rights secured by treaty to American fishermen. The United States minister in London has been instructed to present a demand for \$105,305.02 in view of the damages received by American citizens at Fortune Bay, on the 6th day of January, 1878. The subject has been taken into consideration by the British Government, and an early reply is anticipated.

Upon the completion of the necessary preliminary examinations, the subject of our participation in the provincial fisheries, as regulated by treaty, will at once be brought to the attention of the British Government, with a view to an early and permanent settlement of the whole question, which was only temporarily adjusted by the treaty of Washington.

Efforts have been made to obtain the removal of restrictions found injurious to the exportation of cattle to the United Kingdom.

Some correspondence has also occurred with regard to the rescue and saving of life and property upon the lakes, which has resulted in important modifications of the previous regulations of the Dominion Government on the subject in the interest of humanity and commerce.

In accordance with the joint resolution of the last session of Congress commissioners were appointed to represent the United States at the two International Exhibitions in Australia, one of which is now in progress at Sydney, and the other to be held next year at Melbourne. A desire has been expressed by our merchants and manufacturers interested in the important and growing trade with Australia, that an increased provision should be made by Congress for the representation of our industries at the Melbourne Exhibition of next year, and the subject is respectfully submitted to your favorable consideration.

The assent of the government has been given to the landing, on the coast of Massachusetts, of a new and independent transatlantic cable between France, by way of the French island of St. Pierre and this country, subject to any future legislation of Congress on the subject.

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The conditions imposed, before allowing this connection to be established, are such as to secure its competition in future times of marine cable, and preclude amalgamation, provide for entire equality of rights to our government and that of France in the use of the cable, and prevent violation of the privilege as accorded by France to any future cable communication between France and which may be projected and accomplished by a permanent reduction of the present rates of cable in Europe, felt to be too burdensome to the interest which necessarily flow from the establishment of the

The attention of Congress was drawn to the problem of regulation by Congress of the whole subject by my predecessor in his message of December 1877, and I have fully submitted to your consideration the important action in this matter.

The questions of grave importance with Spain, the incidents of the Cuban insurrection, have been, I trust, fully and honorably settled. It may reasonably be expected that the commission now sitting in Washington for the purpose of settling the claims in this connection will soon be able to bring its report before the Senate.

The long-standing question of East Florida, claimed by the United States, has been renewed as a subject of correspondence, and may require Congressional action for its final disposition.

A treaty with the Netherlands, with respect to the privileges, similar to those with other powers, has been negotiated, and the ratifications were exchanged on the 10th of March. Negotiations for extradition treaties with the Kingdom of Denmark are now in progress.

Some questions with Switzerland, in regard to the rights of emigrants, have arisen, but it is not doubted that they will be settled upon a just and satisfactory basis. A question has arisen in respect to an asserted claim by Swiss municipalities for jurisdiction over persons and property of Swiss citizens in this country. It is possible this may require adjustment.

With the German Empire frequent questions have arisen, the subjects of naturalization and expatriation. The Government has constantly manifested a desire to comply with all treaty stipulations in regard to these subjects.

In consequence of the omission of Congress to provide for a diplomatic representative at Athens, the legation at Constantinople has been drawn. There is now no channel of diplomatic communication between the two countries, and the expediency of providing for a permanent form, is submitted to Congress.

Relations with Austria, Russia, Italy, Portugal, and Spain continue amicable, and marked by no incidents of importance.

A change of the personal head of the Government of Egypt has taken place. No change, however, has occurred in the relations between Egypt and the United States. The action of the Egyptian Government in presenting to the city of New York one of the ancient obelisks, which possess such historic interest, is highly appreciated as a generous mark of international regard. If prosperity should attend the enterprise of its transportation across the Atlantic, its erection in a conspicuous position in the chief commercial city of the nation will soon be accomplished.

The treaty recently made between Japan and the United States in regard to the revision of former commercial treaties, it is now believed will be followed by similar action on the part of other treaty powers. The attention of Congress is again invited to the subject of the indemnity funds received some years since from Japan and China, which, with their accumulated interest, now amount to considerable sums. If any part of these funds is justly due to American citizens they should receive it promptly; and whatever may have been received by this government in excess of strictly just demands, should in some form be returned to the nations to whom it equitably belongs.

The Government of China has signified its willingness to consider the question of the emigration of its subjects to the United States with a dispassionate fairness, and to co-operate in such measures as may tend to prevent injurious consequences to the United States. The negotiations are still proceeding, and will be pressed with diligence.

A question having arisen between China and Japan about the Lev Chew Islands, the United States Government has taken measures to inform those powers of its readiness to extend its good offices for the maintenance of peace, if they shall mutually deem it desirable, and find it practicable to avail themselves of the proffer.

It is a gratification to be able to announce that, through the judicious and energetic action of the military commanders of the two nations on each side of the Rio Grande, under the instructions of their respective governments, raids and depredations have greatly decreased, and, in the localities where formerly most destructive, have now almost wholly ceased. In view of this result, I entertain a confident expectation that the prevalence of quiet on the border will soon become so assured as to justify a modification of the present orders to our military commander as to crossing the border, without encouraging such disturbances as would endanger the peace of the two countries.

The third installment of the award against Mexico under the claim commission of July 4, 1868, was duly paid, and has been put in course of distribution in pursuance of the act of Congress providing for the same. This satisfactory situation between the two countries leads me to anticipate an expansion of our trade with Mexico and an increase contribution of capital and industry by our people to the development of the great resources of that country. I earnestly commend to the wisdom of Congress the provision of suitable legislation looking to this result.

Diplomatic intercourse with Colombia is again fully restored by the arrival of a minister from that country to the United States. This is especially fortunate in view of the fact that the question of an inter-oceanic canal has recently assumed a new and important aspect, and is now under discussion with the Central American countries through whose territory the canal, by the Nicaragua route, would have to pass. It is trusted that enlightened statesmanship on their part will see that the early prosecution of such a work will largely enure to the benefit, not only of their own citizens and those of the United States, but of the commerce of the civilized world. It is not doubted that should the work be undertaken under the protective auspices of the United States, and upon satisfactory concessions for the right of way, and its security, by the Central American Governments, the capital for its completion would be readily furnished from this country and Europe, which might, failing such guarantees, prove inaccessible.

Diplomatic relations with Chili have also been strengthened by the reception of a minister from that country.

The war between Peru, Bolivia, and Chili still continues. The United States have not deemed it proper to interpose in the matter further than to convey to all the governments concerned the assurance that the friendly offices of the Government of the United States for the restoration of peace upon an honorable basis will be extended, in case the belligerents shall exhibit a readiness to accept them.

Cordial relations continue with Brazil and the Argentine Republic, and trade with those countries is improving. A provision for regular and more frequent mail communication, in our own ships, between the ports of this country and the nations of South America, seems to me to deserve the attention of Congress as an essential precursor of an enlargement of our commerce with them and an extension of our carrying trade.

A recent revolution in Venezuela has been followed by the establishment of a provisional government. This government has not yet been formally recognized, and it is deemed desirable to await the proposed action of the people, which is expected to give it the sanction of constitutional forms.

A naval vessel has been sent to the Samoan Islands, to make surveys and take possession of the privileges ceded to the United States by Samoa in the harbor of Pago Pago. A coaling-station is to be established there, which will be convenient and useful to United States vessels.

The subject of opening diplomatic relations with Roumania and Servia, now become independent sovereignties, is at present under consideration, and is the subject of diplomatic correspondence.

There is a gratifying increase of trade with nearly all European and American countries, and it is believed that, with judicious action in regard to its development, it can and will be still more enhanced, and



that American products and manufactures will find new and expanding markets. The reports of diplomatic and consular officers upon this subject, under the system now adopted, have resulted in obtaining much valuable information, which has been and will continue to be laid before Congress and the public from time to time.

The third article of the treaty with Russia of March 30, 1867, by which Alaska was ceded to the United States, provides that the inhabitants of the ceded territory, with the exception of the uncivilized native tribes shall be admitted to the enjoyment of all the rights of citizens of the United States, and shall be maintained and protected in the free enjoyment of their liberty, property, and religion. The uncivilized tribes are subject to such laws and regulations as the United States may from time to time adopt in regard to the aboriginal tribes of that country.

Both the obligations of this treaty and the necessities of the people require that some organized form of government over the Territory of Alaska be adopted.

There appears to be no law for the arrest of persons charged with common-law offenses, such as assault, robbery, and murder, and no magistrate authorized to issue or execute process in such cases. Serious difficulties have already arisen from offenses of this character, not only among the original inhabitants, but among citizens of the United States and other countries, who have engaged in mining, fishing, and other business operations within the Territory. A bill authorizing the appointment of justices of the peace and constables, and the arrest and detention of persons charged with criminal offenses, and providing for an appeal to United States courts for the district of Oregon, in suitable cases, will, at a proper time, be submitted to Congress.

The attention of Congress is called to the annual report of the Secretary of the Treasury on the condition of the public finances.

The ordinary revenues from all sources for the fiscal year ended June 30, 1879, were \$273,827,184.46; the ordinary expenditures for the same period were \$266,947,883.53, leaving a surplus revenue for the year of \$6,879,300.93.

The receipts for the present fiscal year, ending June 30, 1880, actual and estimated, are as follows: Actual receipts for the first quarter, commencing July 1, 1879, \$79,843,663.61; estimated receipts for the remaining three-quarters of the year, \$208,156,336.39; total receipts for the current fiscal year, actual and estimated, \$288,000,000.

The expenditures for the same period will be, actual and estimated, as follows: For the quarter commencing July 1, 1879, actual expenditures \$91,683,385.10; and for the remaining three-quarters of the year the expenditures are estimated at \$172,316,614.90, making the total expenditures \$264,000,000, and leaving an estimated surplus revenue for the year ending June 30, 1880, of \$24,000,000. The total receipts during the next fiscal year, ending June 30, 1881, estimated according to existing laws, will be \$288,000,000, and the estimated ordinary expenditures for the



same period will be \$278,097,364.39, leaving a surplus of \$9,902,635.61 for that year.

The large amount expended for arrears of pensions during the last and the present fiscal year, amounting to \$21,747,249.60, has prevented the application of the full amount required by law to the sinking-fund for the current year; but these arrears having been substantially paid, it is believed that the sinking-fund can hereafter be maintained without any change of existing law.

The Secretary of War reports that the War Department estimates for the fiscal year ending June 30, 1881, are \$40,380,428.93, the same being for a less sum of money than any annual estimate rendered to Congress from that department during a period of at least twelve years.

He concurs with the General of the Army in recommending such legislation as will authorize the enlistment of the full number of twenty-five thousand men for the line of the Army, exclusive of the three thousand four hundred and sixty-three men required for detached duty, and, therefore, not available for service in the field.

He also recommends that Congress be asked to provide by law for the disposition of a large number of abandoned military posts and reservations, which, though very valuable in themselves, have been rendered useless for military purposes by the advance of civilization and settlement.

He unites with the Quartermaster-General in recommending that an appropriation be made for the construction of a cheap and perfectly fire-proof building for the safe storage of a vast amount of money accounts, vouchers, claims, and other valuable records now in the Quartermaster-General's Office, and exposed to great risk of total destruction by fire.

He also recommends, in conformity with the views of the Judge-Advocate-General, some declaratory legislation in reference to the military statute of limitations as applied to the crime of desertion.

In these several recommendations I concur.

The Secretary of War further reports that the work for the improvement of the South Pass of the Mississippi River, under contract with Mr. James B. Eads, made in pursuance of an act of Congress, has been prosecuted during the past year with a greater measure of success in the attainment of results than during any previous year. The channel through the South Pass, which at the beginning of operations in June, 1875, had a depth of only seven and one-half feet of water, had, on the 8th of July, 1879, a minimum depth of twenty-six feet, having a width of not less than two hundred feet, and a central depth of thirty feet. Payments have been made in accordance with the statute, as the work progressed, amounting, in the aggregate, to \$4,250,000; and further payments will become due, as provided by the statute, in the event of success, in maintaining the channel now secured.

The reports of the General of the Army and of his subordinates pre-

sent a full and detailed account of the military operations for the suppression of hostilities among the Indians of the Ute and Apache tribes and praise is justly awarded to the officers and troops engaged, for promptness, skill, and courage displayed.

The past year has been one of almost unbroken peace and quiet on the Mexican frontier, and there is reason to believe that the efforts of this government and of Mexico to maintain order in that region will prove permanently successful.

This department was enabled during the past year to find temporary though crowded, accommodations, and a safe depository for a portion of its records, in the completed east wing of the building designed for the State, War, and Navy Departments. The construction of the north wing of the building, a part of the structure intended for the use of the War Department, is being carried forward with all possible dispatch and the work should receive from Congress such liberal appropriation as will secure its speedy completion.

The report of the Secretary of the Navy shows continued improvement in that branch of the service during the last fiscal year. Extensive repairs have been made upon vessels, and two new ships have been completed and made ready for sea.

The total expenditures of the year ended June 30, 1879, including specific appropriations not estimated for by the department, were \$13,555,710.09. The expenses chargeable to the year, after deducting the amount of these specific appropriations, were \$13,343,317.79; but this is subject to a reduction of \$283,725.99, that amount having been drawn upon warrants, but not paid out during the year. The amount of appropriations applicable to the last fiscal year was \$14,538,646.17. There was, therefore, a balance of \$1,479,054.37 remaining unexpended and to the credit of the department, on June 30, 1879. The estimates for the fiscal year ending June 30, 1881, are \$14,864,147.95, which exceed the appropriations for the present fiscal year \$361,897.28. The reason for this increase is explained in the Secretary's report. The appropriations available for the present fiscal year are \$14,502,250.67, which will in the opinion of the Secretary, answer all the ordinary demands of the service. The amount drawn from the Treasury from July 1 to November 1, 1879, was \$5,770,404.12, of which \$1,095,440.33 has been refunded leaving as the expenditure for that period \$4,674,963.79. If the expenditures of the remaining two-thirds of the year do not exceed the proportion for these four months, there will remain unexpended at the end of the year \$477,359.30 of the current appropriations. The report of the Secretary shows the gratifying fact that among all the disbursing officers of the pay corps of the Navy there is not one who is a defaulter to the extent of a single dollar. I unite with him in recommending the removal of the Observatory to a more healthful location. That institution reflects credit upon the nation, and has obtained the approbation of scientific men in all parts of the world. Its removal from its present

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location would not only be conducive to the health of its officers and professors, but would greatly increase its usefulness.

The appropriation for judicial expenses, which has heretofore been made for the Department of Justice, in gross, was subdivided at the last session of Congress, and no appropriation whatever was made for the payment of the fees of marshals and their deputies, either in the service of process or for the discharge of other duties; and, since June 30, these officers have continued the performance of their duties without compensation from the government, taking upon themselves the necessary incidental outlays, as well as rendering their own services. In only a few unavoidable instances has the proper execution of the process of the United States failed by reason of the absence of the requisite appropriation. This course of official conduct on the part of these officers, highly creditable to their fidelity, was advised by the Attorney-General, who informed them, however, that they would necessarily have to rely for their compensation upon the prospect of future legislation by Congress. I therefore especially recommend that immediate appropriation be made by Congress for this purpose.

The act making the principal appropriation for the Department of Justice at previous sessions has uniformly contained the following clause: "And for defraying the expenses which may be incurred in the enforcement of the act approved February 28, 1871, entitled 'An act to amend an act approved May 30, 1870, entitled "An act to enforce the rights of citizens of the United States to vote in the several States of the Union and for other purposes," or any acts amendatory thereof or supplementary thereto.'"

No appropriation was made for this purpose for the current year. no general election for members of Congress occurred, the omission a matter of little practical importance. Such an election will, however, take place during the ensuing year, and the appropriation made for the pay of marshals and deputies should be sufficient to embrace compensation for the services they may be required to perform at such elections.

The business of the Supreme Court is, at present, largely in arrears. It cannot be expected that more causes can be decided than are now disposed of in its annual session, or that by any assiduity the distinguished magistrates who compose the court can accomplish more than is now done. In the courts of many of the circuits, also, the business has increased to such an extent that the delay of justice will call the attention of Congress to an appropriate remedy. It is believed that all is done in each circuit which can fairly be expected from its judicial force. The evils arising from delay are less heavily felt by the United States than by private suitors, as its causes are advanced by the courts when it is seen that they involve the discussion of questions of a public character.

The remedy suggested by the Attorney-General is the appointment of additional circuit judges and the creation of an intermediate court

of errors and appeals, which shall relieve the Supreme Court of a part of its jurisdiction, while a larger force is also obtained for the performance of circuit duties.

I commend this suggestion to the consideration of Congress. It would seem to afford a complete remedy, and would involve, if ten additional circuit judges are appointed, an expenditure, at the present rate of salaries, of not more than sixty thousand dollars a year, which would certainly be small in comparison with the objects to be attained.

The report of the Postmaster-General bears testimony to the general revival of business throughout the country. The receipts of the Post Office Department for the fiscal year ended June 30, 1879, were \$30,041,982.86, being \$764,465.91 more than the revenues of the preceding year. The amount realized from the sale of postage-stamps, stamp envelopes, and postal cards was \$764,465.91 more than in the preceding year, and \$2,387,559.23 more than in 1877. The expenditures of the department were \$33,449,899.45, of which the sum of \$376,461.63 was paid on liabilities incurred in preceding years.

The expenditures during the year were \$801,209.77 less than in the preceding year. This reduction is to be attributed mainly to the operation of the law passed June 17, 1878, changing the compensation of postmasters from a commission on the value of stamps sold to a commission on stamps canceled.

The amount drawn from the Treasury on appropriations in addition to the revenues of the department was \$3,031,454.96, being \$2,276,197. less than in the preceding year.

The expenditures for the fiscal year ending June 30, 1881, are estimated at \$39,920,900, and the receipts from all sources at \$32,210,000, leaving a deficiency to be appropriated for out of the Treasury \$7,710,900.

The relations of the department with railroad companies have been harmonized, notwithstanding the general reduction by Congress of the compensation by the appropriation for special facilities, and the railway post-office lines have been greatly extended, especially in the Southern States. The interests of the railway mail service and of the public would be greatly promoted and the expenditures could be more readily controlled by the classification of the employes of the railway mail service as recommended by the Postmaster-General; the appropriation for salaries, with respect to which the maximum limit is already fixed by law, to be made in gross.

The Postmaster-General recommends an amendment of the law regulating the increase of compensation for increased service and increased speed on star routes, so as to enable him to advertise for proposals for such increased service and speed. He also suggests the advantages to accrue to the commerce of the country from the enactment of a general law authorizing contracts with American-built steamers, carrying the American flag, for transporting the mail between ports of the United States.

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States and ports of the West Indies and South America, at a fixed maximum price per mile, the amount to be expended being regulated by annual appropriations, in like manner with the amount paid for the domestic star service.

The arrangement made by the Postmaster-General and the Secretary of the Treasury for the collection of duty upon books received in the mail from foreign countries has proved so satisfactory in its practical operation, that the recommendation is now made that Congress shall extend the provisions of the act of March 3, 1879, under which this arrangement was made, so as to apply to all other dutiable articles received in the mails from foreign countries.

The reports of the Secretary of the Interior and of the Commissioner of Indian Affairs, setting forth the present state of our relations with the Indian tribes on our territory, the measures taken to advance their civilization and prosperity, and the progress already achieved by them, will be found of more than ordinary interest. The general conduct of our Indian population has been so satisfactory, that the occurrence of two disturbances, which resulted in bloodshed and destruction of property, is all the more to be lamented.

The history of the outbreak on the White River Ute Reservation, in Western Colorado, has become so familiar by elaborate reports in the public press, that its remarkable incidents need not be stated here in detail. It is expected that the settlement of this difficulty will lead to such arrangements as will prevent further hostile contact between the Indians and the border settlements in Western Colorado.

The other disturbance occurred at the Mescalero Agency, in New Mexico, where Victoria, at the head of a small band of marauders, after committing many atrocities, being vigorously chased by a military force, made his way across the Mexican border and is now on foreign soil.

While these occurrences, in which a comparatively small number of Indians were engaged, are most deplorable, a vast majority of our Indian population have fully justified the expectations of those who believe that by humane and peaceful influences the Indian can be led to abandon the habits of savage life and to develop a capacity for useful and civilized occupations. What they have already accomplished in the pursuit of agricultural and mechanical work, the remarkable success which has attended the experiment of employing as freighters a class of Indians hitherto counted among the wildest and most intractable, and the general and urgent desire expressed by them for the education of their children, may be taken as sufficient proof that they will be found capable of accomplishing much more if they continue to be wisely and fairly guided. The "Indian policy" sketched in the report of the Secretary of the Interior, the object of which is to make liberal provision for the education of Indian youth, to settle the Indians upon farm-lots in severalty, to give them title in fee to their farms, inalienable for a certain number of years, and when their wants are thus provided for to

dispose by sale of the lands on their reservations not occupied and use by them, a fund to be formed out of the proceeds for the benefit of the Indians, which will gradually relieve the government of the expense now provided for by annual appropriations, must commend itself as just and beneficial to the Indians, and as also calculated to remove those obstructions which the existence of large reservations presents to the settlement and development of the country. I therefore earnestly recommend the enactment of a law enabling the government to give Indians a title in fee, inalienable for twenty-five years, to the farm-land assigned to them by allotment. I also repeat the recommendation made in my first annual message, that a law be passed admitting Indian who can give satisfactory proof of having by their own labor supported their families for a number of years, and who are willing to detach themselves from their tribal relations, to the benefit of the homestead act, and to grant them patents containing the same provision of inalienability for a certain period.

The experiment of sending a number of Indian children of both sexes to the Hampton Normal and Agricultural Institute, in Virginia, to receive an elementary English education and practical instruction in farming and other useful industries, has led to results so promising, that it was thought expedient to turn over the cavalry barracks at Carlisle, in Pennsylvania, to the Interior Department for the establishment of an Indian school on a larger scale. This school has now one hundred and fifty-eight pupils, selected from various tribes, and is in full operation. Arrangements are also made for the education of a number of Indian boys and girls belonging to tribes on the Pacific slope in a similar manner, at Forest Grove, in Oregon. These institutions will commend themselves to the liberality of Congress and to the philanthropic munificence of the American people.

Last spring information was received of the organization of an extensive movement in the Western States, the object of which was the occupation by unauthorized persons of certain lands in the Indian Territory ceded by the Cherokees to the government for the purpose of settlement by other Indian tribes.

On the 29th of April I issued a proclamation, warning all persons against participation in such an attempt; and, by the co-operation of military force, the invasion was promptly checked. It is my purpose to protect the rights of the Indian inhabitants of that Territory to the full extent of the executive power. But it would be unwise to ignore the fact that a territory so large and so fertile, with a population so sparse and with so great a wealth of unused resources, will be found more exposed to the repetition of such attempts as happened this year when the surrounding States are more densely settled and the westward movement of our population looks still more eagerly for fresh lands to occupy. Under such circumstances, the difficulty of maintaining the Indian Territory in its present state will greatly increase, and the

Indian tribes inhabiting it would do well to prepare for such a contingency. I therefore fully approve of the advice given to them by the Secretary of the Interior on a recent occasion, to divide among themselves in severalty as large a quantity of their lands as they can cultivate; to acquire individual title in fee instead of their present tribal ownership in common, and to consider in what manner the balance of their lands may be disposed of by the government for their benefit. By adopting such a policy they would more certainly secure for themselves the value of their possessions, and at the same time promote their progress in civilization and prosperity, than by endeavoring to perpetuate the present state of things in the Territory.

The question whether a change in the control of the Indian service should be made was in the Forty-fifth Congress referred to a joint committee of both Houses for inquiry and report. In my last annual message I expressed the hope that the decision of that question, then in prospect, "would arrest further agitation of this subject, such agitation being apt to produce a disturbing effect upon the service as well as the Indians themselves." Since then, the committee having reported, the question has been decided in the negative by a vote in the House of Representatives.

For the reasons here stated, and in view of the fact that further uncertainty on this point will be calculated to obstruct other much-needed legislation, to weaken the discipline of the service, and to unsettle salutary measures now in progress for the government and improvement of the Indians, I respectfully recommend that the decision arrived at by Congress at its last session be permitted to stand.

The efforts made by the Department of the Interior to arrest the depredations on the timber-lands of the United States have been continued, and have met with considerable success. A large number of cases of trespass have been prosecuted in the courts of the United States; others have been settled, the trespassers offering to make payment to the government for the value of the timber taken by them. The proceeds of these prosecutions and settlements turned into the Treasury far exceed in amount the sums appropriated by Congress for this purpose. A more important result, however, consists in the fact that the destruction of our public forests by depredation, although such cases still occur, has been greatly reduced in extent, and it is probable that if the present policy is vigorously pursued, and sufficient provision to that end is made by Congress, such trespasses, at least those on a large scale, can be entirely suppressed, except in the Territories, where timber for the daily requirements of the population cannot, under the present state of the law, be otherwise obtained. I therefore earnestly invite the attention of Congress to the recommendation made by the Secretary of the Interior, that a law be enacted enabling the government to sell timber from the public lands without conveying the fee, where such lands are principally valuable for the timber thereon, such



sales to be so regulated as to conform to domestic wants and business requirements, while at the same time guarding against a sweeping destruction of the forests. The enactment of such a law appears to become a more pressing necessity every day.

My recommendations in former messages are renewed in favor of enlarging the facilities of the Department of Agriculture. Agriculture is the leading interest and the permanent industry of our people. It is the abundance of agricultural production, as compared with our home consumption, and the largely increased and highly profitable markets abroad which we have enjoyed in recent years, that we are mainly indebted for our present prosperity as a people. We must look for its continued maintenance to the same substantial resource. There is no branch of industry in which labor, directed by scientific knowledge, yields such increased production in comparison with unskilled labor, and no branch of the public service to which the encouragement of liberal appropriations can be more appropriately extended. The omission to render such aid is not a wise economy; but, on the contrary, undoubtedly results in losses of immense sums annually that might be saved through well-directed efforts by the government to promote this vital interest.

The results already accomplished with the very limited means heretofore placed at the command of the Department of Agriculture is an earnest of what may be expected with increased appropriations for the several purposes indicated in the report of the Commissioner, with a view to placing the department upon a footing which will enable it to prosecute more effectively the objects for which it is established.

Appropriations are needed for a more complete laboratory, for the establishment of a veterinary division, and a division of forestry, and for an increase of force.

The requirements for these and other purposes, indicated in the report of the Commissioner under the head of the immediate necessities of the department, will not involve any expenditure of money that the country cannot with propriety now undertake in the interests of agriculture.

It is gratifying to learn from the Bureau of Education the extent to which educational privileges throughout the United States have been advanced during the year. No more fundamental responsibility rests upon Congress than that of devising appropriate measures of financial aid to education, supplemental to local action in the States and Territories and in the District of Columbia. The wise forethought of the founders of our government has not only furnished the basis for the support of the common-school systems of the newer States, but laid the foundations for the maintenance of their universities and colleges in agriculture and the mechanic arts. Measures in accordance with the traditional policy for the further benefit of all these interests and the extension of the same advantages to every portion of the country it is hoped will receive your favorable consideration.

To preserve and perpetuate the national literature should be among



## ANNUAL MESSAGE OF THE PRESIDENT.

the foremost cares of the National Legislature. The library gathered at the Capitol still remains unprovided with any suitable accommodations for its rapidly increasing stores. The magnitude and importance of the collection, increased as it is by the deposits made under the law of copyright, by domestic and foreign exchanges, and by the scientific library of the Smithsonian Institution, call for building accommodations which shall be at once adequate and fire-proof. The location of such a public building, which should provide for the pressing necessities of the present, and for the vast increase of the nation's books in the future, is a matter which addresses itself to the discretion of Congress. It is earnestly recommended as a measure which should unite all suffrage and which should no longer be delayed.

The joint commission created by the act of Congress of August 1876, for the purpose of supervising and directing the completion of the Washington National Monument, of which commission the President is a member, has given careful attention to this subject, and already the strengthening of the foundation has so far progressed as to insure the entire success of this part of the work.

A massive layer of masonry has been introduced below the original foundation, widening the base, increasing the stability of the structure, and rendering it possible to carry the shaft to completion. It is earnestly recommended that such further appropriations be made for the continued prosecution of the work as may be necessary for the completion of this national monument at an early day.

In former messages, impressed with the importance of the subject, I have taken occasion to commend to Congress the adoption of a general policy towards the District of Columbia. The report of the Commissioners of the District, herewith transmitted, contains suggestions and recommendations, to all of which I earnestly invite your careful attention. I ask your early and favorable consideration of the views which they express as to the urgent need of legislation for the reclamation of the marshes of the Potomac and its Eastern Branch, within the limits of the city, and for the repair of the streets of the capital, heretofore laid with wooden blocks, and now by decay rendered almost impassable, and a source of imminent danger to the health of its citizens. The means at the disposal of the Commissioners are wholly inadequate for the accomplishment of these important works, and should be supplemented by timely appropriations from the Federal Treasury.

The filling of the flats in front of the city will add to the adjacent lands and parks now owned by the United States a large and valuable domain, sufficient, it is thought, to reimburse its entire cost, and will also, as an incidental result, secure the permanent improvement of the river for the purposes of navigation.

The Constitution having invested Congress with supreme and exclusive jurisdiction over the District of Columbia, its citizens must of necessity look to Congress alone for all needful legislation affecting their

interests; and as the territory of this District is the common property of the people of the United States, who, equally with its resident citizens, are interested in the prosperity of their capital, I cannot doubt that you will be amply sustained by the general voice of the country in any measures you may adopt for this purpose.

I also invite the favorable consideration of Congress to the wants of the public schools of this District, as exhibited in the report of the Commissioners. While the number of pupils is rapidly increasing, no adequate provision exists for a corresponding increase of school accommodation, and the Commissioners are without the means to meet this urgent need. A number of the buildings now used for school purposes are rented, and are, in important particulars, unsuited for the purpose. The cause of popular education in the District of Columbia is surely entitled to the same consideration at the hands of the National Government as in the several States and Territories, to which munificent grants of the public lands have been made for the endowment of schools and universities.

RUTHERFORD B. HAYES.

EXECUTIVE MANSION,  
*December 1, 1879.*

# REPORT

OF

## THE SECRETARY OF THE TREASURY.

**TREASURY DEPARTMENT,**  
*Washington, D. C., December 1, 1879.*

SIR: I have the honor to submit the following annual report:

The ordinary revenues, from all sources, for the fiscal year ended June 30, 1879, were—	
From customs.....	\$137, 250, 047 70
From internal revenue.....	113, 561, 610 58
From sales of public lands.....	924, 781 06
From tax on circulation and deposits of national banks	6, 747, 500 32
From repayment of interest by Pacific Railway com- panies.....	2, 707, 201 03
From customs' fees, fines, penalties, &c.....	1, 100, 871 66
From fees—consular, letters-patent, and lands.....	2, 136, 051 79
From proceeds of sales of Government Property.....	181, 128 81
From premium on sales of coin.....	8, 104 38
From premium on loans.....	1, 496, 943 25
From profits on coinage, &c.....	2, 924, 938 67
From revenues of the District of Columbia.....	1, 741, 461 16
From miscellaneous sources.....	3, 046, 544 05
<b>Total ordinary receipts.....</b>	<b>273, 827, 184 46</b>

The ordinary expenditures for the same period were—	
For civil expenses.....	\$16, 439, 997 17
For foreign intercourse.....	1, 333, 836 13
For Indians.....	5, 206, 109 08
For pensions, including \$5,373,000 arrearages of pensions.	35, 121, 482 39
For the military establishment, including river and harbor improvements and arsenals.....	40, 425, 660 73

For the naval establishment, including vessels, machinery, and improvements at navy-yards.....	\$15, 125, 126 84
For miscellaneous expenditures, including public buildings, light-houses, and collecting the revenue.	38, 870, 205 78
For expenditures on account of the District of Columbia.....	3, 597, 516 41
For interest on the public debt.....	105, 327, 949 00
For payment of Halifax award.....	5, 500, 000 00
Total ordinary expenditures.....	<u>266, 947, 883 53</u>
Leaving a surplus revenue of.....	<u>\$6, 879, 300 93</u>

Which was applied as follows:

To the redemption of United States notes, &c.....	\$31, 617 50
To the redemption of fractional currency.....	705, 158 66
To the redemption of six per cent. bonds for the sinking-fund.....	18, 500 00
To increase of cash balance in the Treasury.....	6, 124, 024 77
	<u>6, 879, 300 93</u>

The amount due the sinking-fund for the year was \$36,955,604 63, leaving a deficiency on this account of \$30,076,303 70.

Compared with the previous fiscal year, the receipts for 1879 have increased \$16,711,159 70, in the following items: In customs revenue, \$7,079,367 50; in internal revenue, \$2,979,985 84; in premium on loans, \$1,496,943 25; in repayment of interest by Pacific Railroad companies, \$1,340,246 67; in profits on coinage, \$1,234,176 34; and in miscellaneous items, \$2,580,440 10. There was a decrease of \$647,853 94, as follows: In sales of public lands, \$154,962 31; in premium on sales of coin, \$308,997 92; in semi-annual tax on banks, \$115,552 64; and in proceeds of sales of Government property, \$68,341 07; making a net increase in the receipts from all sources for the year of \$16,063,305 76.

The expenditures show an increase over the previous year of \$32,223,731 26, as follows: In the War Department, \$8,271,512 88; in the Interior Department, \$8,561,292 11, (Indians, \$576,828 80, and pensions, \$7,984,463 31;) in the interest on the public debt, \$2,827,074 35; and in the civil and miscellaneous, \$12,563,851 92. There was a decrease of \$2,240,174 53 in the Navy Department; making a net increase in the expenditures of \$29,983,556 73.

# REPORT OF THE SECRETARY OF THE TREASURY

FISCAL YEAR 1880.

For the present fiscal year the revenue, actual and estimated, is as follows:

Receipts.	For the quarter ended September 30, 1879.	
	Actual.	
From customs .....	\$44,290,000	\$83,497 93
From internal revenue .....	29,000,000	109,691 81
From sales of public lands .....	3,000,000	17,383 61
From tax on circulation and deposits of national banks .....	3,000,000	360,569 60
From repayment of interest by Pacific Railway companies .....		252,427 40
From customs' fees, fines, penalties, &c. ....		239,579 20
From fees—consular, letters-patent, and lands ....		506,864 20
From proceeds of sales of Government property....		55,965 30
From profits on coinage, &c. ....		469,486 00
From revenues of the District of Columbia .....	1,000,000	238,864 00
From miscellaneous sources .....		109,334 10
Total receipts .....	79,000,000	\$43,663 60

The expenditures for the same period, actual and estimated, are as follows:

Expenditures.	For the quarter ended September 30, 1879.	
	Actual.	
For civil and miscellaneous expenses, including public buildings, light-houses, and collecting the revenue .....	\$11,000,000	165,764 00
For Indians .....	1,000,000	048,748 00
For pensions—regular .....	1,000,000	892,742 00
For arrears of pensions .....	1,000,000	374,249 00
For military establishment, including fortifications, river and harbor improvements, and arsenals .....	1,000,000	104,897 00
For naval establishment, including vessels and machinery and improvements at navy-yards....	4,000,000	196,569 00
For expenditures on account of the District of Columbia .....	3,000,000	163,728 60
For interest on the public debt .....	3,000,000	736,685 40
Total ordinary expenditures .....	91,000,000	\$683,385 10

Total receipts, actual and estimated .....

Total expenditures, actual and estimated .....

Leaving a balance of .....

After applying the balance of the special deposit of United States notes held in the Treasury for the redemption of fractional currency, amounting to \$8,375,934, to the payment of arrears of pensions, as directed in section 3 of the act approved June 21, 1879, the increased revenue derived during the months of July, August, and September of the present fiscal year, was fully absorbed by current expenses, and the payment of \$16,374,249 60 arrears of pensions accruing under the act approved January 25, 1879. Notwithstanding these unusual demands the Department has been able to purchase and apply to the sinking-fund, out of the surplus revenues for the month of October, \$10,050,000 six per centum bonds of 1881, and \$676,050 five per centum bonds, act of March 3, 1864, the latter of which is the excess of redemptions of these bonds over issues of four per cents. under the refunding acts; and unless unexpected appropriations, available for expenditure within this year, are made by Congress, the surplus revenues, in addition to paying off the balance of arrears of pensions, will probably enable the Department to apply to the sinking-fund account, during the year, the sum of \$24,000,000.

## FISCAL YEAR 1881.

The revenues of the fiscal year ending June 30, 1881, estimated upon existing laws, will be—

From customs .....	\$152,000,000 00
From internal revenue.....	116,000,000 00
From sales of public lands .....	1,000,000 00
From tax on circulation and deposits of national banks.....	6,750,000 00
From repayment of interest by Pacific Railway com- panies .....	1,500,000 00
From customs' fees, fines, penalties, &c .....	1,100,000 00
From fees—consular, letters-patent, and lands.....	2,200,000 00
From proceeds of sales of Government property ....	200,000 00
From profits on coinage, &c.....	2,500,000 00
From miscellaneous sources.....	4,750,000 00
Total ordinary receipts .....	<u>288,000,000 00</u>

The estimates of expenditures for the same period, received from the several Executive Departments, are as follows:

Legislative .....	\$2,954,920 68
Executive .....	13,500,093 91
Judicial.....	399,300 00

Foreign intercourse .....	\$1,185,135 00
Military establishment .....	20,319,794 78
Naval establishment .....	14,509,147 95
Indian affairs .....	4,992,845 86
Pensions .....	32,404,000 00
Public works:	
Treasury Department .....	3,121,150 00
War Department .....	7,557,034 42
Navy Department .....	375,000 00
Interior Department .....	508,635 32
Department of Agriculture .....	6,650 00
Postal service .....	7,711,900 00
Miscellaneous .....	17,801,520 75
Permanent annual appropriations:	
Interest on the public debt .....	88,877,410 00
Sinking-fund .....	39,828,225 72
Refunding—customs, internal revenue, lands, &c .....	5,778,600 00
Collecting revenue from customs .....	5,500,000 00
Miscellaneous .....	1,766,000 00
Total estimated expenditures, including sink- ing-fund .....	278,097,364 39
Or, an estimated surplus of .....	<u>\$9,902,635 61</u>

Excluding the sinking-fund, the estimated expenditures will be \$238,269,138 67, showing a surplus of \$49,730,861 33.

The estimates of revenue for the next fiscal year are based upon the assumption that the increased receipts during the past few months are abnormal, and mainly due to the filling up of wants created by recent depression rather than by the actual increase of trade. These wants being supplied, the revenues for next year probably will not be increased beyond the amount estimated. The estimated expenditures for the same period are based upon the requirements of existing law and the necessary appropriations for public works in course of construction. The estimated surplus of \$9,902,635 61 will probably be exhausted by additional appropriations.

Should Congress increase the appropriations beyond this limit, or repeal or reduce existing taxes, other sources of revenue must be provided. Should this course be determined upon, which, however, the Secretary does not recommend, he would suggest, as a means of

meeting the deficiency, the restoration of a moderate duty on tea and coffee, and the levying of an internal tax upon manufactures of opium, as hereinafter more fully stated.

#### SINKING-FUND.

The Secretary calls the attention of Congress, in this connection, to the acts of February 25, 1862, and July 14, 1870, requiring the purchase or payment of one per centum of the entire debt of the United States within each fiscal year after the first day of July, 1862, to be set apart as a sinking-fund, and the interest in like manner to be applied to the purchase or payment of the public debt, as the Secretary of the Treasury may, from time to time, direct. These acts are regarded as imposing upon the Secretary the duty of providing for the sinking-fund out of the surplus revenues of the Government. It has been impossible to comply with these requirements during the past few years owing to the loss of revenue consequent upon the general depression of business throughout the country; but, as the prospects for increased revenues enlarge with the renewed activity in all branches of industry, it seems proper at this time to urge the importance of meeting the obligations created by these acts. It is estimated that \$39,828,225 72 will be required for this purpose during the next year. Appreciating the necessity for united action in this direction, this Department will heartily co-operate with Congress in the most rigid economy in the public expenditures under its charge, and to that end the Secretary invites careful consideration of the estimates of expenditures submitted by the several Executive Departments. Any appropriations beyond those actually demanded by the necessities of the Government will only impair the ability of the Secretary to carry these laws into effect.

With a view to promote economy the Secretary ventures to suggest for the consideration of the respective Houses, a permanent organization of an appropriation committee for each House, who shall have leave to sit during the recess, with power to send for persons and papers, and to examine all expenditures of the Government; that rule be adopted by the respective Houses limiting appropriation bills to items of appropriation and excluding legislative provisions; that all appropriations, except for the interest of the public debt, be limited to a period not exceeding two years, and that their expenditure be strictly confined to the period of time for which they are appropriated; and that all permanent and indefinite appropriations, made more than four years ago, except that for the public debt, be repealed.



## RESUMPTION OF SPECIE PAYMENTS.

At the date of my last annual report, December 2, 1878, the preparation for the resumption of specie payments, provided for by the act approved January 14, 1875, had been substantially completed. On the first day of January, 1879, the day fixed for the resumption of specie payments, the reserve of coin, over and above all matured liabilities, was \$133,508,804 50.

Previous to that time, in view of resumption, United States notes and coin were freely received and paid in private business as equivalents. Actual resumption commenced at the time fixed by law, without any material demand for coin and without disturbance to public or private business. No distinction has been made since that time between coin and United States notes in the collection of duties or in the payment of the principal or interest of the public debt. The great body of coin indebtedness has been paid in United States notes at the request of creditors. The total amount of United States notes presented for redemption, from January 1 to November 1, 1879, was \$11,256,678. But little coin has been demanded on the coin liabilities of the Government during the same period though the amount accruing exceeded six hundred million dollars. Meantime coin was freely paid into the Treasury and gold bullion was deposited in the assay office and paid for in United States notes. The aggregate gold and silver coin and bullion in the Treasury increased, during that period, from \$167,558,734 19 to \$225,133,558 72, and the net balance available for resumption increased from \$133,508,804 50 to \$152,737,155 48.

In accordance with the position taken in the last annual report, United States notes have been received, since January 1, last, in payment of duties on imports.

To meet the local demand for coin, in places other than New York City, persons applying have been paid silver coin for United States notes, the coin being delivered to them on established express-lines free of expense; and for some time gold and silver coin has been freely paid out at the several sub-treasuries upon current obligations of the Government. There has been, however, but little demand for coin, and United States notes and the circulating-notes of national banks have been received and paid out at par with coin in all business transactions, public or private, in all parts of the country.

The specie standard, thus happily secured, has given an impetus to all kinds of business. Many industries, greatly depressed since the panic of 1873, have revived, while increased activity has been shown in all branches of production, trade, and commerce. Every preparation

for resumption was accompanied with increased business and confidence, and its consummation has been followed by a revival of productive industry unexampled in our previous history.

It is made the duty of this Department to maintain resumption, and for this purpose, in addition to the use of surplus revenue and the fund for resumption purposes, the Secretary is authorized to issue, sell, and dispose of, at not less than par in coin, either four, four and a half, or five per cent. bonds of the description set out in the refunding act, approved July 14, 1870. This act is based upon the idea that all the necessary expenditures of the Government appropriated for by Congress will be met by the current revenues, leaving the surplus revenues and the reserve-fund available for resumption. It is also provided by that act that the amount of United States notes to be redeemable on demand in coin shall be gradually reduced to the sum of \$300,000,000. The act approved May 31, 1873, increases the maximum of United States notes, upon which resumption is to be maintained, to the sum of \$346,681,016, the amount outstanding at the date of the passage of the act. It also provides as follows: "And when any of said notes may be redeemed or be received into the Treasury under any law from any source whatever and shall belong to the United States, they shall not be retired cancelled or destroyed but they shall be reissued and paid out again and kept in circulation."

This act must be construed in connection with the provision of the Constitution, that "no money shall be drawn from the Treasury but in consequence of appropriations made by law." The reserve-fund created by the resumption act could not, without further legislation, be applied to the payment of current appropriations. Nor is it to be presumed that Congress will omit to provide ample revenues to meet such appropriations. Therefore, under existing law, the notes received into the Treasury in exchange for coin will always be available for the purchase of or exchange for coin or bullion. Any United States note in the Treasury may be exchanged for coin under the authority of section 3700, Revised Statutes. When notes cannot be used at par for that purpose they must necessarily remain in the Treasury. To avoid all uncertainty, it is respectfully recommended that by law the resumption-fund be specifically defined and set apart for the redemption of United States notes, and that the notes redeemed shall only be issued in exchange for or purchase of coin or bullion.

The great convenience and easy transportation of notes has thus far enabled the Treasury to exchange them for coin or bullion at all the centres of production of gold and silver in this country, and also to pa

for large sums of foreign coin at the assay office in New York without any material draft on the resumption-fund; and it is believed that this voluntary exchange will, in ordinary times, furnish the Treasury with all the coin necessary. It would be only in an emergency not easy to foresee, and not likely to arise, that the power to sell bonds for resumption purposes would be exercised, but it should be preserved to meet any extraordinary demand for the redemption of notes which might possibly occur.

The Secretary is, therefore, of opinion that the provisions of existing law are ample to enable the Department to maintain resumption even upon the present volume of United States notes. In view, however, of the large inflow of gold into the country and the high price of public securities, it would seem to be a favorable time to invest a portion of the sinking-fund in United States notes, to be retired and cancelled, and in this way gradually to reduce the maximum of such notes to the sum of \$300,000,000, the amount fixed by the resumption act.

The Secretary respectfully calls the attention of Congress to the question whether United States notes ought still to be a legal-tender in the payment of debts. The power of Congress to make them such was asserted by Congress during the war, and was upheld by the Supreme Court. The power to reissue them in time of peace, after they are once redeemed, is still contested in that court. Prior to 1862, only gold and silver were a legal-tender. Bullion was deposited by private individuals in the mints and coined in convenient forms and designs, indicating weight and fineness. Paper money is a promise to pay such coin. No Constitutional objection is raised against the issue of notes not bearing interest to be used as a part of the circulating medium. The chief objection to the emission of paper money by the Government grows out of the legal-tender clause, for without this the United States note would be measured by its convenience in use, its safety, and its prompt redemption. In war, and during a grave public exigency, other considerations may properly prevail; but it would seem that during peace, and, especially, during times of prosperity and surplus revenue, the promissory note of the United States ought to stand like any other promissory note. It should be current money only by being promptly redeemed in coin on demand. The note of the United States is now received for all public dues, it is carefully limited in amount, it is promptly redeemed on demand, and ample reserves in coin are provided to give confidence in and security for such redemption. With these conditions maintained the United States note will be readily received and paid on

all demands. While they are maintained, the legal-tender clause gives no additional credit or sanction to the notes, but tends to impair confidence and to create fears of over-issue. It would seem, therefore, that now and during the maintenance of resumption it is a useless and objectionable assertion of power, which Congress might now repeal on the ground of expediency alone. When it is considered that its constitutionality is seriously contested, and that from its nature it is subject to grave abuse, it would now appear to be wise to withdraw the exercise of such a power, leaving it in reserve to be again resorted to in such a period of war or grave emergency as existed in 1862. The Government derives an advantage in circulating its notes without interest, and the people prefer such notes to coin, as money, for their convenience in use and their certain redemption in coin on demand. This mutual advantage may be secured without the exercise of questionable power; nor need any inconvenience arise from the repeal of the legal-tender clause as to future contracts. Contracting parties may stipulate for either gold or silver coin or current money. In the absence of an express stipulation for coin the reasonable presumption would exist that the parties contemplated payment in current money, and such presumption might properly be declared by law and the contract enforced accordingly.

The Secretary, therefore, respectfully submits to Congress whether the legal-tender clause should not now be repealed as to all future contracts, and parties be left to stipulate the mode of payment. United States notes should still be receivable for all dues to the Government, they should be promptly redeemed on demand, and ample provision made to secure such redemption.

#### COINS AND COINAGE.

The operations of the mints and assay offices during the year, and their condition at the present time, are exhibited in the report of the Director of the Mint.

The report also contains recommendations for increasing the effectiveness of that branch of the service and furnishes information relative to the amount of specie in the country, and the production of the mines of the United States, and statistics, brought up to recent dates, of the currency of the principal countries of the world, of the rates of production of the precious metals, and of their consumption in coinage, and in the arts and manufactures.

The value of the gold coinage executed during the year

was .....	\$40,986,912 00
Of standard silver dollars.....	27,227,500 00
Of subsidiary silver coin.....	382 50
Of minor coin.....	97,798 00
Total .....	68,312,592 50

Gold and silver were separated in the refineries of the mints and the assay office at New York in the amount of \$20,759,549 97 in gold, and \$10,687,526 97 in silver, a total of \$31,447,076 94, and fine and unparted bars were made in the amount of \$12,976,812 68 of gold, and \$9,045,802 11 of silver.

The mints and assay offices generally are in excellent condition, and their capacity is sufficient to meet the demand for coinage and bars.

The gold coinage since 1862, about which time it disappeared from circulation, has been principally in double-eagles, but during the last year over nine per cent. of the gold coins struck were in pieces of smaller denomination. The coinage of eagles and half-eagles will be continued until the demand for small gold coin is supplied.

The coinage of standard silver dollars has been kept fully up to the requirements of law, notwithstanding the difficulty experienced in procuring silver bullion for the mints at San Francisco and Carson, at market rates.

The amount of silver coin of less than a dollar provided for by law having been executed, the coinage of this money has been suspended.

The demand for minor coins, particularly for the one-cent piece, has been pressing.

The bullion production from the mines of the United States for the last year is estimated by the Director to be nearly eighty million dollars, the proportions of gold and silver being about equal. The year's total production is less than that of the preceding year, caused by a diminution in the yield of the mines of Nevada, which was not compensated by increased production in other places.

The Director estimates the coin in the country on October 31, 1879, at \$305,750,497 of gold, and \$121,456,355 of silver. The bullion in the mints and New York assay office at that date awaiting coinage amounted to \$49,931,035 of gold, and \$4,553,182 of silver, making the total amount of coin and bullion \$481,691,069.

The estimating of the specie in the country at any given time is always difficult; but this estimate appears to have been carefully prepared from coinage reports and statistics of recoinage, export, and import.

The amount of gold and silver annually used in the arts and manufactures forms no inconsiderable factor in estimating the production of the mines or the specie available for circulation, and an attempt has been made to arrive at the amounts so used from the records of the New York assay office, which furnishes the principal part of the metals consumed for these purposes, and from reports of the manufacturers. The general result, while incomplete in details, indicates that the total consumption for purposes other than coinage is in excess of estimates heretofore made.

In the last annual report, the Secretary stated:

"It would seem to be the best policy for the present to limit the aggregate issue of our silver dollars, based on the ratio of sixteen to one, to such sums as can clearly be maintained at par with gold, until the price of silver in the market shall assume a definite ratio to gold, when that ratio should be adopted and our coins made to conform to it; and the Secretary respectfully recommends that he be authorized to discontinue the coinage of the silver dollar when the amount outstanding shall exceed fifty million dollars."

He again respectfully calls the attention of Congress to the importance of further limiting the coinage of the silver dollar. The market value of the bullion in this coin has been during the past year from ten to sixteen per cent. less than the market value of the bullion in the gold dollar. The total amount of silver dollars coined to November 1, 1879, under the act of February 28, 1878, was \$45,206,200, of which \$13,002,842 was in circulation, and the remainder, \$32,203,358, in the Treasury at that time. No effort has been spared to put this coin in circulation. Owing to its limited coinage it has been kept at par; but its free coinage would soon reduce its current value to its bullion value, and thus establish a single silver standard. The inevitable result would be to exclude gold coin from circulation. It is impossible to ascertain what amount of silver coin, based upon the ratio of sixteen of silver to one of gold, can be maintained at par with gold, but it is manifest that this can only be done by the Government holding in its vaults the great body of the silver coin. It would seem that nothing would be gained by an unlimited coinage unless it is desirable to measure all values by the silver standard. The Secretary cannot too strongly urge the importance of adjusting the coinage ratio of the two metals by treaties with commercial nations, and, until this can be done, of limiting the coinage of the silver dollar to such a sum as, in the opinion of Congress, would enable the Department to readily maintain the standard dollars of gold and silver at par with each other.

## REFUNDING.

On the 23d of November, 1878, at which date the refunding transactions were brought in the last annual report, there had been issued of four per cent. consols for refunding purposes \$144,770,900, and there remained at that time bonds redeemable as follows:

Authorizing act.	Rate of interest.	Amount.
March 3, 1865 .....	6 per cent..	\$371,424,800
June 14, 1858 .....	5 per cent..	260,000
March 3, 1864, (10-40's) .....	5 per cent..	194,566,300
Total .....	.....	566,251,100

In that report the attention of Congress was called to the three-months' public notice required by law to be given to holders of bonds called for redemption, with the recommendation that the law be so modified that the notice be, at the discretion of the Secretary, not less than ten days nor more than three months. As no action was taken upon this recommendation, on January 1, 1879, the four per cent. loan was offered to the public without changing the period of the notice; and, in view of the practical effect of resumption, the Secretary offered to receive United States notes in payment for the bonds sold.

The bonds were rapidly sold in this country, and the resulting redemptions of five-twenties, many of which were held in Europe, rendered desirable the sale of the bonds in London sufficient to prevent the shipment of gold from this country. To attain this object a contract was made on the 21st day of January, 1879, with certain banks and bankers, under which they agreed to subscribe at once for \$10,000,000 of four per cent. bonds, with option of taking \$15,000,000 more by monthly subscriptions of \$5,000,000 during April, May, and June. On the part of the Government the bonds were to be delivered free of charge in London, at which place an agency was to be maintained during the continuance of the contract. Under this contract \$15,000,000 of bonds were taken.

In the meantime, under authority of the act of January 25, 1879, the Secretary offered to exchange four per cent. bonds for uncalled five-twenties. The amount of five-twenties so exchanged was \$806,000.

On March 4, notice was given that when the remaining five-twenties should be covered by subscriptions, the sale of four per cents for refunding the ten-forty bonds would probably be made upon less favorable terms to the purchaser. Owing partly to fears that the heavy pay-

ments falling due in April and May would create a disturbance in the money market, there was a falling off in the sales of bonds during the month of March. Measures were successfully taken by the Department to secure the adjustment of the accounts of purchasers of the bonds without embarrassment to the business interests of the country.

On the morning of April 4, the amount of outstanding five-twenties not covered by subscriptions to the four per cents. was \$59,565,700. Before the close of business on that day subscriptions were received sufficient to refund the remaining five-twenties, and in accordance with previous notice the offer of January 1 was rescinded. Additional subscriptions were received and rejected, amounting to \$60,919,800.

The refunding of the five-twenties having been accomplished—and no other six per cent. bonds being redeemable—on April 16, \$150,000,000 of the four per cent. bonds were offered at a premium of one-half of one per cent., the proceeds to be applied to the redemption of the five per cent. bonds issued under the act of March 3, 1864, known as ten-forties, reserving the residue, \$44,566,300, necessary for the redemption of the entire loan, for the conversion of refunding certificates offered at the same time. The four per cent. bonds were also offered in exchange for any outstanding uncalled ten-forty bonds.

On the following day subscriptions amounting to \$149,389,650 were received and accepted, and \$34,755,000 received and declined, and the offers of the four per cent. bonds were withdrawn. One subscription for \$40,000,000 of the certificates was also received and declined, the evident purpose of the law authorizing the issue of these certificates being to cause, as far as practicable, a distribution of the public debt among the people. Exchanges were also made in the amount of \$2,089,500.

On April 21, a call was made for the remainder of the ten-forty bonds, and on the 23d, a call was made for \$260,000, loan of 1858, thus completing the redemption of all outstanding redeemable bonds bearing interest at five per cent.

On March 12, 1879, independent-treasury officers were authorized to exchange the ten-dollar certificates, authorized by the act of February 26, 1879, at par for lawful money, and the Treasurer of the United States was authorized to issue them upon the certificate of any national bank designated for the purpose. To facilitate and distribute the sale of these certificates, national banks and public officers were invited to become depositaries for this purpose, as authorized and provided by sections 3639 and 5153, Revised Statutes of the United States.

Each certificate was prepared in the denomination of \$10, and bore



# REPORT OF THE SECRETARY OF THE

interest at the rate of four per cent. per annum which time the quarterly interest began on the into which the certificates were convertible in su-  
ples. Any person subscribing could, at his option registered in his name on the books of the Depa

Immediately upon the advance by the Depa the four per cent. bonds to one-half of one p demand for these certificates greatly increased premium corresponding to the premium on the were convertible were received, but the act issued not only authorized but directed them t for lawful money, thus apparently preventing premium, and the offers were therefore decline

To bring them within the reach of small April 18, their sale was restricted to indep and public officers bonded for that purpose, ceeding \$100 at one time. Evasions of the instructions, however, with a view of immediat tificates into bonds, soon became evident, and, selling the certificates were directed to refuse t was manifest. At the same time commissions amounts, were greatly reduced, and the conver into bonds was postponed until July 1, 1879. however, disposed of as rapidly as the certifica and before the close of the fiscal year.

In response to the invitation to become depo certificates, five hundred and nine public c national banks were designated for the purp sales.

The certificates were sold as follows:

By public officers designated as depositaries.	.....
By national banks.....	.....
By independent-treasury officers.....	.....
In all.....	.....

of which amount there had been converted i to the close of business October 31, 1879, standing \$2,809,400.

Thus, since November 23, 1878, to which da brought in the last annual report, there have be six per cent. and \$193,890,250 five per cent. bor

into bonds bearing interest at four per cent., making an annual saving of interest hereafter of \$9,355,877 50.

The following table shows the transactions in refunding since March 1, 1877, and the annual saving of interest therefrom:

Title of loan.	Rate per ct.	Am't refunded.	Annual interest charge.
Loan of 1858 .....	5	\$260,000	\$9,707,512 50
Ten-forties of 1864 .....	5	193,890,250	
Five-twenties of 1865 .....	6	100,436,050	
Consols of 1865 .....	6	202,663,100	39,071,742 00
Consols of 1867 .....	6	310,622,750	
Consols of 1868 .....	6	37,473,800	
Total .....		845,345,950	48,779,254 50

In place of the above bonds there have been issued bonds bearing interest as follows:

Title of loan.	Rate per ct.	Amount issued.	Annual interest charge.
Funded loan of 1891 .....	4½	\$135,000,000	\$6,075,000
Funded loan of 1907, including refunding certificates .....	4	710,345,950	28,413,830
Total .....		845,345,950	34,488,830

making a saving in the annual interest since March 1, 1877, of \$14,290,416 50.

These transactions have been accomplished without the loss of a dollar, and without appreciably disturbing the current business of the country. In a few days copies of the contracts, circulars, important correspondence, and accounts pertaining thereto, and also to resumption, will be laid before Congress.

The entire transactions in refunding since 1870 have been as follows

Title of loan.	Rate per ct.	Am't refunded.	Annual interest charge.
Loan of 1858 .....	5	\$14,217,000	\$10,405,362 50
Ten-forties of 1864 .....	5	193,890,250	
Five-twenties of 1862 .....	6	401,143,750	
Five-twenties of March, 1864 .....	6	1,327,100	71,234,322 00
Five-twenties of June, 1864 .....	6	59,185,450	
Five-twenties of 1865 .....	6	160,144,500	
Consols of 1865 .....	6	211,337,050	
Consols of 1867 .....	6	316,423,800	
Consols of 1868 .....	6	37,677,050	
Total .....		1,395,345,950	81,639,684 50

# REPORT OF THE SECRETARY OF THE TREASURY

In place of the above bonds there have been issued interest as follows:

Title of loan.	Rate per ct.	Total issued.
Funded loan of 1861.....	5	\$500,000,00
Funded loan of 1891.....	4½	185,000,00
Funded loan of 1907, including refunding certificates.....	4	710,345,9
Total.....		1,395,345,9

making an annual saving hereafter in the interest of refunding operations of \$19,900,846 50.

The following-described bonds will mature in 1880

Authorizing act.	Rate of interest.	Date mature
February 8, 1861.....	6	Dec. 31
July 17 and August 5, 1861.....	6	June 30
March 3, 1863.....	6	June 30
March 2, 1861.....	6	July
July 14, 1870, and January 20, 1871.....	5	May
Total.....		

Of these bonds, the loan of February 8, 1861, and 31, 1880, is payable upon the demand of the holders be provided for from the surplus revenues.

Under the refunding acts of July 14, 1870, and bonds for refunding purposes were authorized \$1,500,000,000. Of this amount there have been stated, \$1,395,345,950, leaving available for future tions \$104,654,050.

It is respectfully suggested that authority be given session of Congress to issue, sell, and dispose of, at in coin, four per cent. bonds of the description set for of July 14, 1870, and refunding certificates of the des in the act of February 26, 1879, with like qualities exemptions, except as hereinafter stated, to the ex redeem the bonds falling due on or before July 1, 1881 and to use the proceeds for that purpose.

It is hoped that the advancing credit of the count Secretary to sell such bonds and certificates at a pre better to maintain the general conditions of the four pe

than to undertake to sell a bond at lower interest. The four per cent. consol is now universally known. The rate of interest is as low as will generally maintain the bond at par, and the premium will measure its advance above par at favorable periods. The certificates should bear the same rate and be sold on the same terms as the bonds. It is important that the authority granted should include the power to refund, from the passage of the act at the present session, and to prepay the excess of interest on the bond to be refunded prior to its maturity. The present is believed to be an exceptionally favorable time for such refunding.

#### THE NATIONAL BANKS.

The report of the Comptroller of the Currency gives complete statistics relative to the operations of the national-banking system from its organization until the present time. The number of banks in operation on October 2 of the present year, the date of their last reports, was 2,048, and the aggregate capital, \$454,067,365; surplus, \$114,786,528; individual deposits, \$719,737,568; specie, including United States coin certificates, \$42,173,731 23; legal-tender notes, including United States certificates, \$95,973,446; loans, \$875,013,107. The total circulation outstanding on November 1 was \$337,181,418.

Among the subjects discussed in the report are the relations which have existed between the national banks and the Government in the resumption of specie payments, and in the funding of the public debt. In both of these important financial operations the co-operation of the national banks has been of essential service to the Government. The banks, in the aggregate, have constantly kept on hand, as reserves nearly one-fourth of the entire amount of legal-tender notes outstanding which, together with the coin, is much in excess of the amount of the reserves required by law. They have constantly held as security for their circulating-notes, and for Government deposits and other purposes, more than one-fifth of the interest-bearing debt of the United States. They have maintained their legal reserves in the Treasury for the redemption of their circulating-notes, and such redemption has been made without failure or delay at their expense. In this mode exchanges have been made between all parts of the country at the lowest possible rates.

The effect of the business depression prevalent from 1873, until the resumption of specie payments, upon the national banks, is shown in the losses which they have sustained and the dividends which many have been compelled to pass; also by the noticeable diminution, from year to year, in the aggregate surplus.

The aggregate capital and deposits of banks, other than national, is also given ; and such other information, in reference to these banks, as could be obtained from the officers who have charge of the execution of the banking laws in the different States.

The very large taxes paid by national banks to the National, State, and municipal authorities, have been a great aid in relieving other property from the burden of taxation, and, in the aggregate, are more than the interest at four per cent. on their entire circulation. Thus the large amount of non-taxable United States bonds held by them became taxable, and these taxes are in effect paid for the franchise they enjoy of issuing circulating-notes.

The cost of liquidating the affairs of national banks which have been placed in the hands of receivers since the establishment of the system is, for the first time, given in the report, and will serve to correct the impression, which has to some extent prevailed, that too great a portion of the assets of such banks have been expended in the settlement of their affairs.

Tables are also given showing the loss to depositors and also other creditors through the insolvency of national banks; and these losses are compared with similar losses incurred by the creditors of insolvent banks other than national, and the comparison is exceedingly favorable to the national system.

The circulation of the banks which, since the passage of the act of January 14, 1875, has largely decreased, is now increasing in its aggregate amount, showing that the system responds promptly to the varying requirements of business.

The advantages of this system over any system of banks hitherto devised are that their circulating-notes are secured beyond peradventure of loss; they are of universal credit in the country wherever issued; they are more perfectly protected from counterfeiting; they equalize exchanges between distant parts of the country; they are promptly redeemed on demand at one common place; the banks are subject to a strict and vigilant surveillance by independent officers of the Government; their condition is frequently made known to the public; and they contribute a very large percentage of their profits in the way of taxes. A system of banking that, after an existence of sixteen years, through war and periods of great inflation and great depression, has produced such results, may fairly appeal for the confidence and support of Congress.

## PUBLIC MONEYS.

The monetary transactions of the Government have been conducted through the offices of the United States Treasurer, nine assistant treasurers, five hundred and ten depositaries, and two hundred and twenty-two national-bank depositaries.

The receipts of the Government from all sources have amounted during the last year, as shown by warrants, to \$1,066,634,827 46, of which \$792,807,643 have been received from loans; \$137,250,047 70 from customs; \$113,561,610 58 from internal revenue; and \$23,015,526 18 from sales of land and from miscellaneous sources. These receipts were deposited as follows:

In independent-treasury offices.....	\$413, 363, 508 43
In national-bank depositaries.....	653, 271, 319 03

These transactions have been conducted without loss, and it may be stated that all officers engaged in the collection or safe-keeping of the revenues of the Government have collected and held the moneys without loss until properly transferred or paid out, and that as far as accounts have been adjusted there appear to be no losses by defaults in disbursements, the trifling balances not adjusted being suspended mainly for information or investigation.

In this connection attention is invited to the suggestions of the First Comptroller of the Treasury, as set forth in his report, in regard to the importance of prescribing by law the frequency and manner in which the current accounts of the disbursing officers of the Departments should be subjected to investigation, the danger to the Treasury of issuing duplicate bonds in lieu of coupon bonds alleged to have been destroyed, and the importance of defining the word "claim" as used in section 3477, Revised Statutes of the United States, and to other suggestions of that officer.

## REVENUE FROM CUSTOMS.

The disbursements for collecting the revenue from customs for expenses incurred within the following fiscal years, have been as follows:

In 1877.....	\$6, 304, 279 57
In 1878.....	5, 525, 787 32
In 1879.....	5, 485, 779 03

This shows a reduction for 1878 over 1877 of \$778,492 25, and a reduction for 1879 over 1878 of \$40,008 29, making a total saving for the two years of \$818,500 54.

A marked improvement has also occurred during the past year in the collection of the revenue from customs.

The revenue under the ad valorem system has fallen short of the amount which should have been collected upon a proper assessment of the real foreign-market value. This was due to a system of undervaluations in the entries at the custom-houses, especially upon goods consigned by foreign manufacturers to agents in the United States. Evidence of such undervaluations has been obtained in many cases, and upon this evidence the invoice prices have been advanced by the local appraisers, and from these advances appeals for reappraisement have been taken in a large number of cases.

The number of such reappraisements had at the port of New York for the years ending June 30, from 1875 to 1878, is as follows:

1875.....	167
1876.....	262
1877.....	207
1878.....	278
1879.....	556

The general appraiser at New York states that, according to the reappraisements demanded since the 30th of June last, the total number for the current fiscal year, at that port, will be likely to reach one thousand.

The action of the local appraisers has, however, been generally sustained on the reappraisements, but the embarrassments resulting therefrom show that some method should be adopted by which such questions may be better disposed of than is permitted by the laws now in force.

One method suggested is the adoption of specific duties in place of ad valorem. This change could, it is believed, be safely adopted with proper limitations in regard to kid gloves, piece-silk goods, piece velvets, and some other classes of goods which now pay an ad valorem duty, and which constitute the chief ground of dispute as to value between the Government and the importers.

Another plan would be to permit the Government, in case of an undervaluation, to take the goods at the invoice price, with a reasonable sum added for freight and other expenses and profit, and then cause sale of the goods to be made on Government account. By a treaty between France and Italy, made some years since, it was provided that goods ascertained by inspection to be undervalued to the extent of five per cent. might be seized and sold by the Government, the importer receiving his own valuation for the goods, together with a profit of five

per cent. A similar plan adopted in England had the effect of breaking up this system of undervaluation.

The Senate Committee on Finance recommended the adoption of a similar measure in its report on the bill which increased the duty on woollen goods, which became a law March 2, 1867; but it was not adopted by Congress. It contemplated that the Government might take the goods at the importer's valuation, with an addition thereto of ten per cent. for expenses and profit.

The Secretary is convinced that if the *ad valorem* system on the classes of goods named, as well as on some others, is continued, the adoption of a plan of this character will prove beneficial to the honest importer as well as to the interests of the Government.

The difficulties attendant upon the collection of duties on sugars under the Dutch-color standard, which were alluded to in the last report of this Department, continued during the past year. Sugar continued to be imported which had either been artificially colored by the addition of foreign substances, or which, by the process of manufacture, had been so radically changed as to produce sugars of the highest saccharine strength, while possessing the lowest grades of color prescribed by the Dutch standard.

It has been held by the courts that Congress, in imposing the duty upon sugars according to their color, meant the true color of the sugar which is developed by the ordinary process of manufacture, and which indicates the degree of perfection to which the process of clarification has been carried.

Acting upon this view, the Department issued instructions to its customs officers that where the degree of saccharine strength, as compared with the color, showed that the sugar had not been manufactured in the mode contemplated by law, duties should be collected according to the true color of the sugar; and, for the purpose of carrying out this view, definite relations were established between the color and the strength. These instructions have had the effect of repressing the importation of the objectionable classes of sugars before referred to, and of producing a more faithful collection of the duties upon sugars imported, according to the true intent and meaning of the law. Until the matter is settled, this Department will maintain the position it has heretofore assumed, of disregarding the apparent color of the sugar where the facts justify it, and assessing duties upon the true color of the sugar under the theory above stated.

By the adoption of new regulations at the port of New York, respecting the weighing of sugar, the difference between the invoice weight



and the actual weight, as returned by the Government weighers, has been reduced from 10 $\frac{7}{16}$  per cent. in 1877, to 4 $\frac{7}{8}$  per cent. in 1879, making a saving to the Government in duties of fully three million dollars.

Reference is made in another part of this report to circumstances under which it may become necessary to reimpose the duties upon tea and coffee, should additional revenue be required. Such revenue can better be derived from those sources than from any other. The duties formerly in force were specific, and therefore no troublesome questions of value intervened. The articles are bulky and hence cannot be easily smuggled, and the additional cost created by the duty would be so slight as scarcely to be felt by the people.

Some complaint has arisen in regard to the manner in which examinations of passengers' baggage have been made at the port of New York. The system of examinations necessary to carry out the law, has made the customs officers obnoxious to many people, but any system of examination sufficient to detect or prevent smuggling will be offensive to the parties concerned. It has been the aim of the officers of this Department to apply the law equally to all persons. The annoyances incidental to the system have been increased by the lack of facilities to make the examinations with proper dispatch. It is thought, however, that the latter cause of complaint will be removed upon the completion of the new barge office, already authorized by Congress. The duties collected on passengers' baggage at the port of New York, during the three years ended the 30th of June last, were as follows:

Year.	Duties collected.
1877.....	\$63, 030 11
1878.....	86, 760 64
1879.....	171, 857 51

The law does not define any limit of quantity or value in regard to either household or personal effects of persons arriving in the United States, which may be admitted free of duty, and it is recommended that a limitation governing the free entry of these classes of articles may be established by Congress.

#### OPIUM.

Large quantities of opium prepared for smoking are brought into the United States, and this article, being of small bulk and great value, is easily smuggled. A similar article is manufactured in the United

States from the crude opium, and in endeavoring to ascertain whether in any given case, the article has been smuggled, it has been found difficult to determine whether it is of domestic or foreign manufacture.

The imported article now pays a duty of \$6 per pound. It is one that will bear a high rate of taxation, and it is recommended that an internal tax upon opium, prepared in the United States for smoking, of an amount equal to the duty upon the imported article, to be paid by stamps, be adopted. This would yield a considerable revenue, without repressing any enterprise which should receive encouragement at the hands of Congress. It is also recommended that provision be made for affixing customs-stamps to packages of imported opium prepared for smoking, in the manner now required in the case of imported cigars, and that opium prepared for smoking, imported into the United States or manufactured in the United States, found without proper stamps, be made liable to seizure and forfeiture.

#### RICE.

The total importations of rice during the last fiscal year amounted to 75,824,923 pounds. Of this quantity 59,430,871 pounds were imported into San Francisco, and about 55,000,000 pounds came from China. A large part was undoubtedly consumed by the Chinese on the Pacific coast, who are not citizens of the United States, and who have no intention of becoming such.

The article will bear a higher rate of duty than that now imposed by law without materially enhancing the cost of living to the general consumer.

#### INTERNAL REVENUE.

The receipts from the several sources of taxation under the internal-revenue laws for the fiscal year ending June 30, 1879, were as follows :

From spirits.....	\$52,570,284 69
From tobacco .....	40,135,002 65
From fermented liquors.....	10,729,320 08
From banks and bankers.....	3,198,883 59
From penalties, &c.....	279,497 80
From adhesive stamps.....	6,706,384 06
From arrears of taxes under repealed laws .....	299,094 00
<b>Total .....</b>	<b>113,918,466 87</b>

The amount of collections shown by the foregoing table includes commissions on sales of stamps, paid in kind, as well as amounts collected in 1878, but not deposited till the last fiscal year. There thus arises an apparent variation between the amounts of collections given in the table and those shown by the covering-warrants of the Treasury.

The increase of the revenue from spirits during 1879 was \$2,149,468 89; the increase from tobacco for the same year was but \$42,247 98. The chief sources of internal revenue are spirits, tobacco, and fermented liquors, which yield this year an income of \$103,434,607 42, out of a total internal revenue of \$113,918,466 87. The very large proportion of the revenue derived from those sources is, of itself, an argument for the stability of the rates of taxation upon them.

If the proportion were small, fluctuation in the rates of taxation would be of less consequence. The simple agitation of the question of the reduction of the tobacco tax caused a temporary suspension of operations in the various manufactures of tobacco, and is estimated by the Commissioner of Internal Revenue to have caused a diminution in the receipts from tax on that article during the first half year of 1878, of nearly two millions of dollars. Besides reducing the income from the tax, the uncertainty arising from an anticipation of a change of rates, by suspending production, threw

multitudes of work-people out of employment. The change of rates in the tax on tobacco and spirits, or the anticipation of such a change, tends at once to diminish the revenue, disorganize the industries relating to those commodities, and to derange trade. The demand for change of rates does not originate with the consumers, who pay the greater part of the tax, but chiefly with those who seek an enhancement of profit on the capital invested in the manufacture.

The falling off in the income from tobacco that may be anticipated from the last reduction in the rate of taxation (estimated as likely to amount to one-third of the tax collected in the last fiscal year) should be regarded as an admonition that, in the interest of the public revenue as well as of industry and commerce, no further change in the established rates of taxation should, for the present, be made.

#### COMMERCE AND NAVIGATION.

The total tonnage of vessels of the United States, as shown by the records of the Register's bureau, at the close of the fiscal year ended June 30, 1879, was 4,169,600 tons. Of this tonnage 1,491,533 tons represented 2,717 vessels registered for the foreign trade, and 2,678,067 tons represented 22,491 vessels enrolled and licensed and engaged in the coasting or domestic trade. There has been an increase of 94,350

tons employed in domestic trade, and a decrease of 137,514 tons employed in the foreign trade by sea, as compared with the tonnage of last year.

The vessels built during the year are classed as follows:

	Number.	Tonnage.
Sail-vessels .....	468	66, 86
Steam-vessels .....	335	86, 36
Canal-boats enrolled .....	36	4, 06
Barges .....	293	35, 72
	1, 132	193, 00

The vessels built in 1878 comprised 235,504 tons, being slightly in excess of the number built during the past year.

The total tonnage of vessels entered at the seaboard ports from foreign countries was 11,530,527 tons during the year ended June 30, 1878, and 13,768,137 tons during the last fiscal year, showing an increase of 2,237,610 tons, or about 19 per cent. The American tonnage entered exhibited an increase of only 40,306 tons, or 1 per cent while the foreign showed an increase of 2,197,304 tons, or nearly 2 per cent. The tonnage in these cases is computed on the basis of the number of entries of vessels, and not on the number of vessels, and is restricted to the seaboard ports. Of the total amount of merchandise brought in at seaboard, lake, and river ports, during the last fiscal year an amount of the value of \$143,599,353 was imported in American vessels, and \$310,499,599 in foreign; of the exports, a value of \$128,425,323 was shipped in American, and \$600,769,633 in foreign vessels. Of the combined imports and exports, 23 per cent. only of the total value was conveyed in American vessels.

In 1857, over 75 per cent. of the merchandise imported and exported was carried in vessels of the United States; at present, but 23 per cent., as stated, is carried in such vessels, though the total volume of the trade has risen from a value of nearly seven hundred, to nearly twelve hundred, millions of dollars.

It is neither to the advantage nor the honor of the country that so immense a proportion of its foreign carrying trade has passed to other nations.

The great decline in our tonnage, as is well known, was due to the war; and soon after its close it was proposed to facilitate the restoration to our merchant-marine of vessels that had been transferred to foreign flags. But the effort at restoration failed, and a special prohibition against the return of such vessels was embodied in the statute

It may well be questioned whether the severity of the existing statute might not properly be relaxed after the lapse of so long a time, during which the privilege of registry has been denied to this class of vessels, and since the grounds for denial have, in a measure, lost their original force. It has always been the policy of the law to restrict the privileges of American registry to vessels built in this country. The object was to further the ship-building and naval interests of the country; and this policy was so successful as to advance the United States to the second rank among nations as respects tonnage and the number of its ships. While wood was the article mainly used in the construction of ships, we had the advantage over foreign nations in the cost of material. Our ship-builders could not only supply vessels for domestic commerce, but could successfully compete in the carrying trade of the world. The use of iron in ship-building, in place of wood, is, however, steadily increasing, and in the cost of iron and in the price of labor other commercial nations have the advantage. It is a grave question of public policy whether the period has not arrived when the unlimited right of purchase, as under the English statutes, should be extended to vessels as well as to other commodities, and when admission to American registry upon the payment of duties should be allowed thereupon importation. The recovery of our old position in the carrying trade will more than counterbalance any disadvantage likely to ensue from a modification of restrictions upon the right of purchase, while a moderate duty on ships imported will enable our ship-builders to compete successfully in the construction of iron vessels of the largest class. The proper policy to be pursued is difficult to determine, but the great importance of considering the subject is respectfully submitted to the attention of Congress.

## EXPORTS AND IMPORTS.

The exports and imports of the United States during the last fiscal year, are as follows:

Exports of domestic merchandise.....	- - - - -	\$698, 340, 700
Exports of foreign merchandise.....	- - - - -	12, 098, 651
Total.....	- - - - -	<hr/> 710, 439, 441
Imports of merchandise.....	- - - - -	445, 777, 775
Excess of exports over imports....	- - - - -	<hr/> 264, 661, 666

Compared with the previous year, the imports are greater by \$3,726,243, and the exports by \$15,573,675.

imports are greater by

The annual average of the excess of such imports over exports for the ten years ended June 30, 1873, is \$104,706,922; but during the last four years there has been an excess of exports over imports as follows: In 1876, \$79,643,481; in 1877, \$151,152,094; in 1878, \$257,814,234; and in 1879, \$264,661,666.

The total gold value of exports of domestic merchandise from the United States has increased from \$275,166,697 in 1869, to \$698,340,790 in 1879, an increase of 154 per cent. With one or two unimportant exceptions, the United States stands alone among the commercial nations in having an excess of exports over imports of merchandise.

The increase in the values of our exports is derived mainly from breadstuffs, preserved meats, copper, live animals, agricultural implements, furs and fur-skins, distilled spirits, and refined sugar. Many other articles exhibit a large increase in the quantity exported, but a decrease in value owing to their lower prices. The articles which show the greatest increase in the quantities exported are wheat, flour, oats, corn, rye, copper, cotton, petroleum and other oils, provisions, (excepting beef and lard,) quicksilver, distilled spirits, starch, sugar, molasses, tallow, and leaf tobacco.

The value of the exports of breadstuffs from the United States during the last fiscal year, amounted to \$210,355,528, and constituted 30 per cent. of the total value of our exports of domestic merchandise. The value of breadstuffs exported during the year 1873, amounted to only \$98,743,151.

The almost unlimited capacity of the western and northwestern States for the production of cereals, in connection with the facilities for cheap transportation, has brought them into sharp competition with the older States and with foreign countries.

Many products of American manufacture, previously exported in small quantities, or not at all, now find profitable markets in foreign countries, and some of these products are now exported to countries from which, a few years ago, they were largely imported into the United States.

The importation of merchandise into the United States amounted to \$642,136,210, during the fiscal year ended June 30, 1873. It fell to \$437,051,523 in 1878, and increased to \$445,777,775 in 1879—an increase of \$8,726,252, or of two per cent. as compared with the preceding year. The importation of railroad-bars declined from 531,537 tons in 1872, to 2,611 tons in 1879. The production of railroad-bars in the United States during the year 1878, amounted to 788,112 tons.

# REPORT OF THE SECRETARY OF THE TREASURY.

The total amount of exports and imports of coin and bullion during the last fiscal year, was as follows:

Exports of coin and bullion.....	\$24,997,441
Imports of coin and bullion.....	20,296,000
Excess of exports over imports.....	<u>4,701,441</u>

During each year since 1861, the exports of specie have exceeded the imports of specie. The largest excess of such exports over imports was reached during the year 1864, when it amounted to \$92,280,929. Since the year 1875, the excess of exports of specie has rapidly declined, amounting during the year ended June 30, 1878, to only \$3,918,811, and during the fiscal year ended June 30, 1879, to only \$4,701,441.

A marked change has recently taken place in the movement of the precious metals. During the months of July, August, and September of the current fiscal year, the imports of coin and bullion exceeded the exports \$33,125,337, and from the 1st of October to the 15th of November the imports of coin and bullion at the port of New York exceeded the exports at that port \$26,381,584, indicating that from July 1 to November 15 the entire imports of coin and bullion exceeded the exports about sixty million dollars.

This marked change in the movement of coin and bullion was not unexpected. During the last four years the value of our exports of merchandise has exceeded the value of our imports of merchandise \$733,271,475. The excess of exports has heretofore been mainly met by the remittance to this country of American securities, but the time appears to have come when the balance of trade in our favor is to be adjusted by means of the precious metals.

## INTERNAL COMMERCE.

The internal commerce of the country, as exhibited by the tonnage transported on railroads, has steadily increased in volume, even during the period of commercial depression of the last six years. This affords an illustration of the recuperative powers of the country, as the commodities transported on railroads are the products of agriculture, of mining, and of manufacturing industries. More than ninety per cent. of the internal commerce of the country is now carried on by means of railroad transportation, and the habits of the producing and commercial classes are becoming more and more conformed to its methods and necessities.

The facilities for direct trade afforded by arrangements entered into

between connecting railroads has greatly extended the trade limits of the seaports and of all interior points.

Similar combinations between railroads and ocean-steamer lines afford extensive privileges for direct foreign trade at all the important interior points of the country. The competition of rival lines for through-traffic has given rise to grave questions touching inter-State commerce. These questions relate chiefly to the matter of discriminations in rates. As purely national questions they demand a careful investigation under the authority of Congress.

#### CLAIMS.

The need of some legislation for the adjudication of claims which are now within the jurisdiction of this Department, has been called in former reports, to the attention of Congress. Proper methods for investigating claims, such as are used in courts of justice, are not within the power of the Department. A tribunal which may require the best evidence which the nature of the case admits, the cross examination of witnesses instead of *ex parte* statements, a public hearing, and a public record of proceedings, is essential for the proper adjustment of such claims.

Section 1063 of the Revised Statutes contains a provision for sending to the Court of Claims certain disputed cases arising in the Departments. A general provision of law by which all important disputed questions of law or fact might be remitted to that tribunal for trial, would greatly relieve the officers of this Department, and tend to promote the ends of justice. It may be assumed that the method adopted by all courts of justice for ascertaining the truth, best serves that purpose.

The importance of providing some limitation of time within which claims against the Government shall be prosecuted, or, for want of such prosecution, be forever barred, is again urged upon the attention of Congress.

It may be assumed that any claim in behalf of an individual who is in a situation to present it, will, if well founded, be presented for payment within six years from the time when the claimant's right first accrued. Such limitations form part of the codes of all civilized nations and experience has shown that, as between individuals, less injustice is done by the conclusive presumption that claims, thus delayed beyond a reasonable time, are unfounded or have been adjusted, than by allowing them to be prosecuted after witnesses to the transaction have died or been lost sight of, and other evidence has been destroyed.



The presumption is much stronger in case of a claim against the Government than in one against an individual. The Government is always solvent, and can always be found, and it is difficult to suggest a reason why a valid claim against it should not be presented within the term of six years.

Under the present circumstances, it is impossible to administer equal justice to those who present old claims. The Comptrollers and Commissioner of Customs have by law the final determination of all claims coming within their jurisdiction, and while one of them, or the Auditor who first considers the claim, may reject it, because its prosecution has been for many years delayed, and he therefore believes it to be unfounded, another officer feels it his duty to examine it upon such evidence as may still exist, because Congress has not interposed a statute of limitation in bar of its allowance. The Third Auditor, in his report, has called special attention to the importance of some limitation of this character.

It is recommended, therefore, that it be provided by law that no claim pending in any of the Executive Departments shall be allowed unless presented for payment within six years after such claim first accrued, with the usual exception in favor of those disqualified by age, or otherwise, from presenting the claim within such time.

Legislation of a similar character in favor of those against whom the Government holds claims seems eminently proper. Cases of great hardship arise in which sureties upon bonds of a principal long since dead or insolvent are held liable to pay balances upon accounts, which might, by due diligence, have been enforced against the principal while he was alive or solvent, as the case might be.

A distinction is made in most codes as to the limitation of suits upon simple contracts and upon contracts under seal. It seems, however, but justice to provide that persons liable to the Government, even by contracts under seal, should be discharged from liability after the lapse of six years from the time when such liability has been ascertained and fixed.

As to claims accruing in the ordinary course of current business, the Department is well organized for their investigation, and a decision made as final by the accounting officers, should be regarded as final in all tribunals; and it is believed that all propositions for the re-examination of claims thus adjudicated, either in the Court of Claims or elsewhere, are opposed to the true principles of legislation. It is submitted that the true end of legislation on the subject of claims is, to render their adjustment speedy and final, and to discourage the allowance of old demands, or the re-examination of those already settled.

**SPECIAL TRIBUNAL IN NEW YORK FOR TRIAL OF REVENUE CASES.**

In the report of this Department for the year 1877, the following paragraph occurs:

"Embarrassments attendant upon the collection of the revenue at the port of New York, alluded to in the report of my immediate predecessor, growing out of the large number of suits brought to recover alleged excess of duties, have not ceased, but a considerable number of such suits have been pressed to trial, with results in favor of the Government in the majority of cases. Owing to the multiplicity of such suits, a considerable delay necessarily occurs before they can be brought to trial; which delay is adverse to the interests both of the Government and the importers. It was then recommended that a special tribunal be created by law, for the trial of customs-revenue cases, at the port of New York."

The Secretary takes this occasion to state that the importance of this recommendation has been made more apparent by the experience of the last year than ever; and that it would be of much advantage both to the Government, and to the importers if it could be adopted.

It is also recommended that, for the purpose of securing a greater uniformity in the collection of duties on imports at the various ports of the United States, the Secretary of the Treasury be authorized, in cases of variance between the appraised value or classification for duty of similar merchandise at two or more ports in the United States, to prescribe regulations under which the board of general appraisers, or a majority of them, shall decide upon the true dutiable value or classification of such imports.

The present force of general appraisers is limited to four, and these have been found inadequate to perform the necessary duties in the appraisal of imports. It is therefore recommended that authority be given for the appointment of three additional general appraisers.

**DISTINCTIVE PAPER.**

In the last annual report mention was made that proposals for a new paper for printing public securities had been invited. As a result, a paper has been adopted, having for its distinctive features a continuous silken thread and distributed silk fibre of different colors, both of which are incorporated with the pulp in the process of manufacture. As soon as the character of the paper had been determined upon, public advertisement was made for proposals for its manufacture, and the bid of Messrs. Crane & Co., of Dalton, Mass., being the lowest received, was accepted. Under the contract which has been made with that firm the Government pays, including the cost of fibre, 44 cents per pound for the distinctive paper, a reduction of

26 cents per pound as compared with the lowest price heretofore paid, and a saving in the ordinary use of this paper of about \$25,000 per annum; but, in case a larger amount of paper shall hereafter be needed for printing bonds, or for other purposes, the saving would be correspondingly greater.

It is believed that this new paper will protect the public against counterfeiting quite as well as that which has heretofore been in use, while for drafts and checks its use is much preferred. As soon as the supply of old paper is exhausted, which will be about the first of January next, all United States notes, national-bank notes, bonds, and checks of public disbursing officers, will be printed upon the new.

#### BUREAU OF ENGRAVING AND PRINTING.

The system adopted in the business of engraving and printing notes and securities of the Government has been closely adhered to, and as a result this bureau is upon a thorough business basis. During the past fiscal year an unprecedented amount of work has been executed, approximating ninety per cent. of increase over the year prior, while the increase in the aggregate expenditures has been but fifty-four per cent. It is gratifying to know that while this work was executed at reduced cost, the employes, under the operation of the plan of paying "by the piece," have been receiving better compensation. Those formerly paid \$1 50 a day have been able to earn from \$1 80 to \$1 90 a day of not exceeding six-hours' labor.

It is expected that this work will be removed from the Treasury-Department building to the new building in course of erection by the spring of 1880, when, with increased facilities, it can be consolidated and still more economically managed.

#### LIGHT-HOUSE ESTABLISHMENT.

The light-house establishment remains in a satisfactory condition. During the fiscal year it has put in operation thirteen new light-houses, seventy-five new river-lights, one new steam fog-signal and one hundred and twelve new buoys, of which last, three are automatic signal-buoys. It has discontinued six lights, which were no longer needed, and changed the characteristics of ten others, so that they will be more useful than heretofore to commerce and navigation.

The board has continued the work of changing the burners of the smaller lights in the several light-house districts, so as to substitute coal-oil for lard-oil as an illuminant, but it has not found it expedient to make the change in lights of the higher orders.

Experiments with the electric light have been continued with such results that the board has now asked for means to put the light to the practical test of a working exhibition in a light-house. The estimate for this purpose is commended to the attention of Congress.

The experiments, as to the penetration of sound through fog, made by the late Professor Henry, have been continued by his successor in the board, Professor Morton, with the results detailed in the appendix to the board's annual report.

#### COAST AND GEODETIC SURVEY.

The report of the Superintendent for the fiscal year shows the intimate bearing of this work on commerce, navigation, and many requirements in civil life. For river and harbor improvements, light-house service, marine constructions, and for engineering purposes generally, the records of the survey contain precise details pertaining to geographical positions, shore-line, tides and currents, distances and directions, heights and contour of ground, the hydrography of tidal waters, and the magnetic variation in all the States and Territories.

The results of the year include twenty-six hydrographic surveys; additional geodetic operations and topography in fifty-two sites of work; determinations of magnetic variation at forty widely-separated localities; longitude and latitude at others; and special observations on tides and sea-currents. For the mariner, the charts of the survey are marked with compass variations derived from observations directly useful to land-surveyors in the interior.

The survey, having mapped and developed the most important reaches of the Mississippi, is represented by a member in the "Mississippi River Commission" as organized under the act of Congress approved June 28, 1879, to consider expedients for the improvement of that river. All previous commissions of like importance have been constituted in the same way, and it has generally devolved on this branch of the public service to make the needful surveys. Economy in means has been thus secured by the employment of observers in readiness and acquainted with all the details required in connection with questions of improvement.

Geodetic work now in progress along the thirty-ninth parallel is well advanced to the eastward of the Sierra Nevada mountains.

In the course of the year the demand for charts has largely increased. At our seaports sales have more than doubled, and the volumes of the Coast Pilot and printed tide-tables are in steady request. With the annual reports appendices are given on subjects of special interest.

These are constantly called for by intelligent citizens, but the number of volumes printed has, for some years, barely sufficed for distribution to public departments and institutions of learning.

#### MARINE-HOSPITAL SERVICE.

The Surgeon-General of Marine-Hospital Service reports that 20,922 seamen received relief during the last fiscal year, of whom 11,499 were treated in hospital and 9,423 as dispensary or out-patients; being an increase of 2,699 in the number of patients over last year, and of 4,114 over any year previous to 1878. The amount of hospital-tax received and covered into the Treasury during the year was \$361,409 58, while the total expenditures were \$375,164 01; making a per capita cost of \$17 93, a reduction over 1878 of \$2 11. A continuous reduction has been effected in the cost per capita, from \$38 41 in 1870, when the service was reorganized, down to the present time.

On June 11, 1879, a circular was issued, offering to the owners of such American vessels as might desire them, proper facilities for the physical examination of sailors employed by them. The offer has been received with much favor, and the results already reached are such as to justify the recommendation that such examinations be made compulsory by law, so that no American vessel shall be allowed to proceed to sea until the crew shall have been examined and pronounced physically sound, and able to distinguish the color of signal-lights; and the employes in the cook's and steward's department of vessels carrying passengers, free from disease.

In previous reports to Congress, recommendations have been made by this Department that statutory provision be made for examinations for appointment and promotion in the medical corps of this service, and those recommendations are again renewed. While no person has received an appointment as assistant surgeon without a fair and thorough examination as to his professional qualifications, yet it is believed that such examination should rest on something more than departmental regulations.

No appropriation was made by Congress during the past year whereby active co-operation with local health authorities could be undertaken, and no work of this character has been accomplished except the publication of the "Bulletin of Public Health," forty-six weekly numbers of which have been published from the appropriation for printing for this Department. By the act of June 2, 1879, the duty of condensing and publishing the information received from revenue, consular, and marine-hospital officers and local health authorities was assigned to the National Board of Health.

The need of a marine hospital, for the care of sick and disabled seamen, at the port of New York, has long been recognized, and repeated recommendations have been made to Congress that one of the military hospitals at that port be transferred by law to this Department for such purposes. Within the last year, at the request of this Department, the Hon. Secretary of War has transferred Bedloe's Island, in the harbor of New York, for this purpose, subject to the provisions of the joint resolution, approved March 3, 1877, designating that island as a site for the colossal statue of liberty, and subject also to recall if actually needed for military purposes. The island was immediately occupied, and has been used for marine-hospital purposes since August 1, 1879.

#### PUBLIC BUILDINGS.

The Supervising Architect reports that, during the past year, work on the public buildings, under control of this Department, has progressed satisfactorily, and that in consequence of the low prices of labor and materials, which have ranged throughout the year, contracts for the various branches of work have been made at rates very advantageous to the Government.

Upon completion of the granite-work for several of the large buildings, reported as nearly finished, one of the largest items of expenditure in the construction of the public buildings will be removed, and it is recommended that liberal appropriations be made for prosecuting the work on such buildings during the ensuing fiscal year. The estimates submitted are believed to be sufficient for the diligent prosecution of the work.

Attention is particularly called to that portion of the report in which reference is made to the need of a building constructed expressly for the preservation of the records and files belonging to this Department. There is unquestionable need of such a structure, and it is recommended that early and ample provision be made therefor by Congress.

#### LIFE-SAVING SERVICE.

The results of the operations of this service during the past year, as shown by the report of the General Superintendent, are highly satisfactory.

The number of reported disasters to vessels during the past year, is two hundred and eighteen. This number is larger than that of any preceding year since the organization of the service, partly because the extension of the service has involved the inclusion of disasters

## REPORT OF THE SECRETARY OF THE

upon coasts thus brought within its purview, and additional casualties have been caused by gales of extraordinary violence.

There were on board these vessels two thousand five persons. Of these two thousand and forty-seven were saved, and fifty-eight lost.

The number of shipwrecked persons cared for at three hundred and seventy-one, to whom one thousand four days of succor were afforded.

The total value of property involved in these disasters of which \$1,445,051 was saved, and \$1,442,800 lost.

Of the twenty-three new stations remaining to be erected this year, under the provision of law, seven have been finished, and six (upon the Gulf coast) are approaching completion. The remaining ten will be erected as soon as possible. The stations upon the lakes have received additions and improvements which render them much more serviceable.

The beneficial results of the act of June 18, 1878, appear in the improvement in the personnel of the service. The higher compensation accorded by the law to the keepers, and the general prestige conferred upon the establishment, appear to have attracted to it a higher average of ability and character. The examination of the whole number of keepers and crews, ten hundred and sixteen persons all told, it was found necessary, during the past year, to replace only seventeen by men better qualified.

This fostering legislation, whose general effect has been to improve the service in public regard, as well as to increase its power and efficiency, has also largely turned the attention of the inventive genius of the country to the production of improved plans and devices for saving life. So many of these have been received that it has been deemed advisable, alike in justice to the inventors and the service, to refer all such inventions to two boards of experts for their examination, under the supervision of the General Superintendent. One of these boards has cognate with the wreck-ordnance and whatever pertains thereto, its members being experts in the theory and practice of life-saving gunnery. The other board has charge of inventions relating to all other life-saving apparatus and appliances for use at life-saving stations.

### REVENUE MARINE.

The following exhibit of the services performed by the vessels of the Revenue Marine during the fiscal year ended June 30, 1879, shows

attainment of better results than have been achieved in any former year:

Aggregate number miles cruised.....	252, 112
Number of vessels boarded and examined.....	32, 853
Number of vessels seized or reported for violating the law..	3, 444
Number of vessels wrecked or in distress, assisted.....	210
Number of persons rescued from drowning.....	123

The estimated value of vessels assisted by revenue vessels, with their cargoes, was \$3,547,073 80. In addition to the foregoing, important assistance was rendered by the revenue vessels to many other branches of the public service.

The expenses of maintaining the service for the last fiscal year were \$844,527 25.

The cadet system for the Revenue Marine, provided by Congress in 1876, has produced satisfactory results. The selection of the cadets upon competitive examination secures young men of superior qualifications, while the plan of conducting all their instruction on shipboard especially fits them for the service in which they are to engage. In June last, six of these cadets, after serving the probationary term of two years as required by law, were advanced to the grade of third lieutenant.

It was stated in the last annual report that some of the older vessels of this service, which would soon need extensive repairs, were provided with machinery of old types, and were expensive in the consumption of fuel, and the suggestion was made that in the interest of economy they should be replaced with new vessels of improved design. It is recommended that appropriate legislation be had at this session of Congress, providing for at least two new steamers for service on the Atlantic and Gulf coasts.

The revenue-steamer "Rush" cruised from about May 1 to October 1 among the islands of the Aleutian Archipelago, to protect the seal-fisheries and sea-otter hunting-grounds, and for the general enforcement of law in Alaska. The commanding officer, under instructions from this Department, made careful observations during his cruise upon the commerce of those waters, the numbers and condition of the population, the resources and natural history of the country, and the tides, currents, &c. The report of the cruise shows that the presence of a revenue-vessel in the waters named is necessary to stop illicit traffic in fire-arms and rum, and to prevent the extermination of the sea-otters and other animals which furnish sustenance to the natives. The report of the special agent in charge of the sea



islands also shows the necessity for the services of a revenue-cutter in Alaskan waters. The recommendation contained in the last annual report that provision be made for the construction of a vessel specially designed for that service, is renewed.

#### NATIONAL BOARD OF HEALTH.

Section 3 of the act of March 3, 1879, establishing a National Board of Health, provides that such board shall report to Congress, at its next session, a full statement of its transactions, together with a plan for a national public-health organization. By section 4 of the act of June 2, 1879, entitled "An act to prevent the introduction of contagious and infectious diseases into the United States," said board is required to make to the Secretary of the Treasury an annual report of its operations, for transmission to Congress, with such recommendations as he may deem important to the public interests. By section 8 of the same act, it is provided that the sum of \$500,000, or so much thereof as may be necessary, thereby appropriated, shall be disbursed under the direction of the Secretary of the Treasury, on estimates made by the National Board of Health, to be approved by him; and that said board shall, as often as quarterly, make a full statement of its operations and expenditures under said act to the Secretary of the Treasury, who shall report them to Congress.

While the Secretary has been disposed to meet the requisitions made by the board, in the liberal spirit which inspired the action of Congress in its establishment, the general provisions of law impose upon the accounting officers the responsibility of deciding whether or not the sums disbursed by the board are within the provisions of law making the appropriations.

The board has submitted to the Secretary its report for the quarter ended September 30, which is herewith transmitted. By this report, it appears that the expenditures under the act of March 3, 1879, which appropriated \$50,000, amount to \$18,896 41, leaving a balance of that appropriation of \$31,103 59. The expenditures under the act of June 2, 1879, amount to \$51,810 26, and the estimated amounts for the payment of September accounts to \$30,000, leaving a balance of the appropriation made by said act, available for future operations, of \$418,180 74.

By the act of April 18, 1879, the Secretary of the Treasury was authorized to contract for the purchase or construction of such steam-vessel and refrigerating-machinery, or to arrange with the Navy Department for the use of such vessel as might be recommended by the National Board of Health, to disinfect vessels arriving from ports sus-

pected of infection with yellow-fever or other contagious disease, and for that purpose the sum of \$200,000, or so much thereof as might be necessary, was appropriated.

The reasons why such a vessel has not been constructed fully appear in a letter from the Secretary of the Treasury of June 25, 1879, in answer to Senate resolution of June 23, 1879, to be found in Executive Document No. 33, Senate, Forty-sixth Congress.

No action has been taken in this Department with reference to the subject since said letter, with the accompanying documents, was transmitted to the Senate. The failure hitherto to enter upon the construction of the ship in question is the less to be regretted because, by the admission of all parties, it was too late, when the subject was presented to the Department for action, to complete the construction of the vessel and its machinery for effective use during the season when yellow-fever might be expected to prevail. The whole matter can now be considered by Congress with the deliberation which so important a matter deserves, and practically no time will be lost if the construction of such ship is promptly ordered.

#### STEAMBOAT INSPECTION.

During the past year 4,289 steam-vessels have been inspected, of an aggregate tonnage of 1,018,109.08 tons, and licenses have been issued to 15,212 officers, an increase over last year of 152 vessels, of 677.05 tons, and of 723 licensed officers.

The total receipts from the inspection of vessels and licensing of officers were \$270,405 57, and the total disbursements for salaries and travelling and other expenses were \$210,434 34, leaving a surplus of receipts over expenditures of \$59,971 23.

#### ALASKA.

The statement was made in the report of last year that the condition of affairs in Alaska demanded the establishment of some form of government competent to restrain disorder, and insure the safety of the inhabitants. Events since that time, have rendered it a matter of urgent necessity that some form of civil government for the Territory of Alaska be established by Congress. Last spring an outbreak seemed imminent between the whites and Indians at Sitka, and had such outbreak occurred, it would, no doubt, have resulted in great loss of life. The white inhabitants, however, foreseeing the danger, communicated with the commander of the British man-of-war "Osprey," then stationed at Esquimalt, and upon receipt of the communication

the vessel started at once for Sitka, arriving there on the first of March. The time for the outbreak had been fixed for the day following the arrival of that vessel, and her timely arrival prevented the calamity that would otherwise have followed. She remained there for sometime, and until relieved by a United States revenue-cutter, and it has been found necessary to keep a cutter in and around Sitka for much of the time since, to prevent the possibility of such an outbreak. At least three murders, however, have occurred during the past year in the neighborhood of Sitka, of Indians by Indians. The laws now in force require that the trial of such offences shall be had in the district courts of California, Oregon, or Washington Territory. This does not seem adequate to the occasion, involving as it does the transportation of the accused and witnesses a long distance, and a trial remote from the locality where the offence was committed.

A form of bill to establish a government for the Territory of Alaska has been prepared in this Department, and will be submitted to Congress, with proper explanations. It is recommended that earnest consideration be given to the measures therein suggested.

The reports from the Seal Islands show continued good health and prosperity among the inhabitants. The maximum number of one hundred thousand fur-seal skins allowed by law has been taken by the Alaska Commercial Company during the past season; and the taxes thereon, with the rental of \$55,000 for the islands, have been paid by said company to the Government, as they became due.

#### DISTRICT OF COLUMBIA.

The net expenditures on account of the District of Columbia for the fiscal year 1879, were \$3,597,516 41. The revenues of the District deposited in the Treasury for same period were \$1,741,461 16.

Since July 1, 1878, at which date, under section 7. of the act of June 11, 1878, the offices of the commissioners of the sinking-fund of the District of Columbia were abolished and their duties and powers transferred to the Treasurer of the United States, the bonded debt of the District has been reduced in the sum of \$418,326 67, and the total annual interest charge thereon reduced \$30,154 11.

In view of the fact that a sinking-fund for the final redemption of the three-sixty-five loan of the District was provided at the last session of Congress by permanent annual appropriation, it is recommended that a permanent annual appropriation for interest upon that loan and for interest and sinking-fund for the old funded debt of the District, including the water-stock bonds, be made. The annual amount required

for this purpose is estimated at \$1,088,352 75, which will meet the interest on the entire bonded debt of the District, and provide for the redemption of the old bonded debt by the maturity of the three-sixty-five loan.

The existing provision of law requiring investment of the appropriation for the sinking-fund of the three-sixty-five loan in bonds of that loan seems to work to disadvantage, while District bonds bearing a higher rate of interest are from time to time maturing. Recommendation is therefore made that authority be given for the investment of any money appropriated for the sinking-funds in question in any bonds of the District of Columbia.

#### PUBLIC SERVICE.

The Secretary acknowledges his obligations to the several officers of bureaus and divisions of the Department for the ability, skill, and industry manifested by them in the discharge of their important and complicated duties. In this report he refers only to the leading operations of the Department, and those only in general terms; but refers for details to the statements and reports herewith transmitted.

The organization of the several bureaus is such, and the system of accounting so perfect, that the financial transactions of the Government during the past two years, aggregating \$3,354,345,040 53, have been adjusted without question, with the exception of a few small balances now in the process of collection, of which it is believed the Government will eventually lose less than \$13,000, or less than four mills on each \$1,000 of the amount involved.

JOHN SHERMAN,

*Secretary.*

Hon. SAMUEL J. RANDALL,

*Speaker of the House of Representatives.*

## TABLES ACCOMPANYING THE REPORT.

TABLE A.—Statement of the net receipts (by warrants) during the fiscal year ended June 30, 1879.

CUSTOMS.		
Quarter ended September 30, 1878.....	\$38,868,268 10	
Quarter ended December 31, 1878.....	29,833,340 25	
Quarter ended March 31, 1879.....	34,508,909 25	
Quarter ended June 30, 1879.....	34,039,530 10	\$137,250,047 70
SALES OF PUBLIC LANDS.		
Quarter ended September 30, 1878.....	260,765 63	
Quarter ended December 31, 1878.....	311,959 67	
Quarter ended March 31, 1879.....	206,210 13	
Quarter ended June 30, 1879.....	145,845 63	924,781 06
INTERNAL REVENUE.		
Quarter ended September 30, 1878.....	28,572,144 46	
Quarter ended December 31, 1878.....	29,068,525 50	
Quarter ended March 31, 1879.....	22,923,186 30	
Quarter ended June 30, 1879.....	32,997,754 32	113,561,610 58
TAX ON CIRCULATION, DEPOSITS, ETC., OF NATIONAL BANKS.		
Quarter ended September 30, 1878.....	3,368,519 03	
Quarter ended December 31, 1878.....	6,936 26	
Quarter ended March 31, 1879.....	3,337,076 32	
Quarter ended June 30, 1879.....	34,968 71	6,747,500 32
REPAYMENT OF INTEREST BY PACIFIC RAILROAD COMPANIES.		
Quarter ended September 30, 1878.....	397,737 10	
Quarter ended December 31, 1878.....	291,921 36	
Quarter ended March 31, 1879.....	126,541 98	
Quarter ended June 30, 1879.....	1,891,000 59	2,707,201 03
CUSTOMS, FEES, FINES, PENALTIES, AND FORFEITURES.		
Quarter ended September 30, 1878.....	244,833 93	
Quarter ended December 31, 1878.....	340,576 33	
Quarter ended March 31, 1879.....	253,275 80	
Quarter ended June 30, 1879.....	262,185 60	1,100,871 66
FEES, CONSULAR, LETTERS PATENT, AND LAND.		
Quarter ended September 30, 1878.....	508,890 76	
Quarter ended December 31, 1878.....	503,489 22	
Quarter ended March 31, 1879.....	485,794 48	
Quarter ended June 30, 1879.....	637,877 33	2,136,051 79
PROCEEDS OF SALES OF GOVERNMENT PROPERTY.		
Quarter ended September 30, 1878.....	41,127 51	
Quarter ended December 31, 1878.....	28,513 81	
Quarter ended March 31, 1879.....	67,925 15	
Quarter ended June 30, 1879.....	43,562 34	181,128 81
PROFITS ON COINAGE.		
Quarter ended September 30, 1878.....	71,968 31	
Quarter ended December 31, 1878.....	902,659 67	
Quarter ended March 31, 1879.....	777,927 29	
Quarter ended June 30, 1879.....	1,172,363 40	2,924,938 67
REVENUES OF DISTRICT OF COLUMBIA.		
Quarter ended September 30, 1878.....	313,275 42	
Quarter ended December 31, 1878.....	920,961 96	
Quarter ended March 31, 1879.....	171,570 47	
Quarter ended June 30, 1879.....	329,633 31	1,741,461 16
MISCELLANEOUS.		
Quarter ended September 30, 1878.....	752,193 18	
Quarter ended December 31, 1878.....	844,247 89	
Quarter ended March 31, 1879.....	578,892 61	
Quarter ended June 30, 1879.....	879,314 75	3,054,648 43
Total ordinary receipts, exclusive of loans and premium.....	272,330,241 21	
Premium on loans.....	1,490,943 25	
Excess of net receipts from loans over redemptions.....	93,361,833 84	
Total net receipts.....	367,189,018 30	
Balance in Treasury June 30, 1878.....	254,489,808 97	
Grand total.....	625,678,827 27	

TABLE B.—Statement of the net disbursements (by warrants) during the fiscal year ended June 30, 1879.

CIVIL.	
Congress.....	\$5,232,621 71
Executive.....	5,082,769 88
Judiciary.....	3,697,898 87
Government of Territories.....	205,818 08
Subtreasuries.....	329,800 82
Public land offices.....	509,150 17
Inspection of steam-vessels.....	210,434 34
Mint and assay-offices.....	171,405 30
Total civil.....	\$16,439,997 17
FOREIGN INTERCOURSE.	
Diplomatic salaries.....	318,146 52
Consular salaries.....	462,870 02
Contingencies of consulates.....	119,681 51
Relief and protection of American seamen.....	42,174 01
Rescuing American seamen from shipwreck.....	3,106 55
American and Spanish Claims Commission.....	8,741 00
Contingent expenses foreign missions.....	81,390 19
International Bi-Metallie Commission.....	37,067 99
Tribunal of Arbitration at Geneva.....	1,000 00
Prisons for American convicts.....	13,031 71
International Exhibition at Paris.....	50,027 31
International Bureau of Weights and Measures.....	13,123 81
Expenses under the neutrality act.....	869 65
International Penitentiary Congress at Stockholm.....	2,005 22
Awards under convention between the United States and Peru.....	1,025 06
Awards under convention between the United States and Mexico.....	150,307 35
Contingent and miscellaneous.....	29,358 23
Award to Great Britain by the Fisheries Commission.....	5,500,000 00
Total foreign intercourse.....	6,833,836 18
MISCELLANEOUS.	
Mint Establishment.....	1,035,849 77
Coast Survey.....	602,901 15
Light-House Establishment.....	1,462,459 37
Building and repairs of light-houses.....	876,975 22
Refunding excess of deposits for unascertained duties.....	1,924,246 31
Revenue-cutter service.....	844,527 25
Building revenue cutters.....	5,607 22
Life-saving service.....	501,965 62
Custom-houses, court-houses, post-offices, &c.....	3,120,000 50
Furniture, fuel, &c., for public buildings under Treasury Department.....	580,925 16
Repairs and preservation of buildings under Treasury Department.....	183,478 40
Collecting customs revenue.....	5,485,543 87
Debiture and drawbacks under customs laws.....	4,931,133 23
Marine-Hospital Establishment.....	374,950 50
Compensation in lieu of moiety.....	42,109 51
Assessing and collecting internal revenue.....	3,528,118 31
Punishing violations of internal-revenue laws.....	97,496 64
Internal-revenue stamps, papers, and dies.....	414,252 12
Refunding duties erroneously or illegally collected.....	242,347 38
Internal-revenue allowances and drawbacks.....	57,487 04
Redemption of internal-revenue stamps.....	20,674 99
Deficiencies of revenue of Post-Office Department.....	5,281,588 02
Return of proceeds of captured and abandoned property.....	68,146 55
Expenses of national loan, salaries.....	197,504 91
Expenses refunding national debt.....	1,915,975 11
Expenses national currency.....	130,769 16
Suppressing counterfeiting and fraud.....	98,863 87
Contingent expenses Independent Treasury.....	45,034 54
Public buildings and grounds in Washington.....	345,360 78
Annual repairs of the Capitol.....	68,500 00
Improving and lighting Capitol grounds.....	112,249 69
State, War, and Navy Departments buildings.....	975,100 00
Columbian Institute for Deaf and Dumb.....	56,000 00
Government Hospital for the Insane.....	186,500 00
Charitable institutions in Washington.....	45,312 93
Support and treatment of transient paupers.....	15,000 00
Survey of public lands.....	415,885 26
Repayment for lands erroneously sold.....	26,621 81
Five per cent. funds, &c., to States.....	45,300 02
Payments under relief acts.....	56,274 23
Southern Claims Commission.....	42,029 97
Reissuing of national currency.....	261,193 92
Postage.....	384,064 22
Expenses of District of Columbia.....	3,254,801 68
Expenses of Bureau of Engraving and Printing.....	81,595 56
Purchase and management of Louisville and Portland Canal.....	23,970 00

TABLE B.—Statement of the net disbursements (by warrants), &amp;c.—Continued.

Vaults, safes, and locks for public buildings.....	\$29,016 12	
Smithsonian Institution.....	68,560 00	
Indemnity for swamp lands.....	21,001 59	
International exhibition.....	3,300 10	
Department of Agriculture.....	123,979 23	
Propagation, &c., of food-fishes.....	99,815 00	
Collecting statistics relating to commerce.....	10,840 52	
Patent Office.....	101,765 59	
Geological survey of Territories.....	104,605 64	
Deposits by individuals for surveys of public lands.....	84,785 57	
Defending suits and claims for seizure of contraband and abandoned property.....	24,524 24	
Sinking-fund of Pacific railroads.....	328,078 21	
Completion of Washington Monument.....	50,983 07	
Education of the blind.....	250,000 00	
Purchase of relics of George Washington.....	12,000 00	
Purchase of Congressional Globe building.....	100,000 00	
Transportation of United States securities.....	36,300 08	
National Board of Health.....	35,001 50	
Redemption of District of Columbia securities.....	342,714 73	
Legal representatives of Joseph Henry.....	11,000 00	
Re-funding taxes to Cumberland Valley Railroad Company.....	33,341 52	
Expenses of eighth and tenth census.....	4,036 46	
Statistical map and atlas of the United States.....	13,400 00	
Improvement of Yellowstone National Park.....	10,000 00	
Miscellaneous.....	128,722 04	
Total miscellaneous.....		\$42,467,723 19
INTERIOR DEPARTMENT.		
Indians.....	\$3,206,100 08	
Pensions (including \$5,373,000 arrears of pensions).....	35,121,482 39	
Total Interior Department.....		40,327,581 47
MILITARY ESTABLISHMENT.		
Pay Department.....	12,164,797 23	
Commissary Department.....	1,962,844 98	
Quartermaster's Department.....	12,524,483 67	
Medical Department.....	388,853 90	
Ordnance Department.....	1,115,100 31	
Military Academy.....	81,638 50	
Improving rivers and harbors.....	8,241,212 44	
Survey of Territories west of the one hundredth meridian.....	56,000 00	
Contingencies.....	47,609 27	
Expenses of recruiting.....	68,177 19	
Signal Service.....	360,210 80	
Expenses of military convicts.....	13,174 19	
Reimbursing States for raising volunteers.....	198,889 36	
Publishing the official records of the rebellion.....	45,898 98	
Support of National Home for Disabled Volunteers.....	880,000 00	
Support of Soldiers' Home.....	109,853 56	
Horses and other property lost in service.....	112,686 25	
Payments under relief acts.....	56,534 47	
Claims for quartermasters' and commissary stores.....	279,968 18	
Construction of military posts.....	199,968 50	
Claims of loyal citizens.....	720,968 32	
Fortifications.....	290,520 75	
Miscellaneous.....	508,235 18	
Total military establishment.....		40,425,666 78
NAVAL ESTABLISHMENT.		
Pay and contingencies of the Navy.....	8,029,535 39	
Marine Corps.....	852,610 60	
Navigation.....	300,679 43	
Ordnance.....	267,265 70	
Equipment and Recruiting.....	946,617 94	
Yards and Docks.....	827,795 49	
Medicine and Surgery.....	141,066 83	
Provisions and Clothing.....	830,058 32	
Construction and Repair.....	1,997,229 29	
Steam-Engineering.....	1,037,907 28	
Miscellaneous.....	53,851 85	
	15,344,618 21	
Less excess of repayments.....	219,491 37	
Total Naval Establishment.....		15,125,126 84
Interest on the public debt.....		105,327,949 00
Total net ordinary expenditures.....		266,947,883 63
Balance in Treasury June 30, 1879.....		358,730,945 74
Total.....		625,678,829 37

TABLE C.—Statement of the issue and redemption of loans and Treasury notes (by warrants) for the fiscal year ended June 30, 1879.

Character of loans.	Issues.	Redemptions.	Excess of issues.	Excess of redemptions.
Treasury notes 1857, act of December 23, 1857 .....		\$100 00		\$100 00
Loan of 1858, act of June 14, 1858 .....		220,000 00		220,000 00
Seven-thirties of 1861, act of July 17, 1861 .....		200 00		200 00
Old demand notes, acts of July 17, and August 5, 1861, and July 12, 1862 .....		827 50		827 50
Five-twenties of 1862, act of February 25, 1862 .....		28,300 00		28,300 00
Legal-tender notes, acts of February 25, 1862, July 11, 1862, and January 7 and March 3, 1863 .....	\$64,107,833 00	64,107,833 00		
Certificates of indebtedness, acts of March 1 and May 17, 1862, and March 3, 1863 .....		1,000 00		1,000 00
Fractional currency, acts of July 17, 1862, March 3, 1863, and June 30, 1864 .....		705,158 66		705,158 66
One year notes of 1863, act of March 3, 1863 .....		2,850 00		2,850 00
Two year notes of 1863, act of March 3, 1863 .....		1,450 00		1,450 00
Coin certificates, act of March 3, 1863 .....	12,317,400 00	41,270,700 00		28,953,300 00
Compound interest notes, acts of March 3, 1863, and June 30, 1864 .....		15,590 00		15,590 00
Ten-forties of 1864, act of March 3, 1864 .....		56,141,150 00		56,141,150 00
Seven-thirties of 1864 and 1865, acts of June 30, 1864, and March 3, 1865 .....		9,600 00		9,600 00
Five-twenties of June 1864, act of June 30, 1864 .....		28,500 00		28,500 00
Five-twenties of 1865, act of March 3, 1865 .....		200,550 00		200,550 00
Consols of 1865, act of March 3, 1865 .....		109,225,400 00		109,225,400 00
Consols of 1867, act of March 3, 1865 .....		269,301,900 00		269,301,900 00
Consols of 1868, act of March 3, 1865 .....		17,361,750 00		17,361,750 00
Certificates of deposit, act of June 8, 1872 .....	89,840,000 00	105,725,000 00		16,385,000 00
Silver certificates, act of February 25, 1873 .....	9,464,400 00	8,460,050 00	\$1,004,350 00	
Refunding certificates, act of February 25, 1873 .....	39,398,110 00	28,549,900 00	12,848,210 00	
Funded loan of 1891, acts of July 14, 1870, July 20, 1871, and January 14, 1875 .....	10,000,000 00		10,000,000 00	
Funded loan of 1897, acts of July 14, 1870, July 20, 1871, and January 14, 1875 .....	568,179,900 00		568,179,900 00	
Total .....	792,807,643 00	699,445,809 16	592,032,460 00	498,670,626 16
Excess of issues .....			592,032,460 00	
Excess of redemptions .....			498,670,626 16	
Net excess of issues charged in receipts and expenditures....			93,361,833 84	



# REPORT OF THE SECRETARY OF THE TREASURY.

TABLE D.—Statement of the net receipts and disbursements (by warrants) for the quarter ended September 30, 1879.

RECEIPTS.		
Customs	.....	\$44,083,497
Sales of public lands	.....	117,385
Internal revenue	.....	29,409,091
Tax on circulation, deposits, &c., of national banks	.....	3,360,586
Repayment of interest by Pacific Railway Companies	.....	252,427
Customs fees, fines, penalties, and forfeitures	.....	239,579
Consular, letters-patent, homestead, and land fees	.....	506,864
Proceeds of sales of government property	.....	55,965
Profits on coinage	.....	460,486
Miscellaneous	.....	1,348,198
Total net ordinary receipts	.....	79,843,663
Balance in Treasury June 30, 1879	.....	358,730,943
Total	.....	438,574,607
DISBURSEMENTS.		
Customs	.....	4,132,678 1
Internal revenue	.....	981,682 1
Diplomatic service	.....	314,335 1
Judiciary	.....	580,003 1
Interior (civil)	.....	1,154,687 2
Treasury proper	.....	6,064,480 2
Quarterly salaries	.....	121,626 1
Total civil and miscellaneous	.....	13,329,492 9
Indians	.....	2,048,748 0
Pensions (including \$16,374,249.60 arrears of pensions)	.....	27,266,991 6
Military establishment	.....	12,104,877 24
Naval establishment	.....	4,196,569 54
Interest on public debt	.....	32,738,685 44
Total net ordinary disbursements	.....	91,683,385 1
Redemptions of the public debt	.....	110,087,432 5
Balance in the Treasury September 30, 1879	.....	236,803,789 7
Total	.....	438,574,607 3

**TABLE E.**—*Statement of outstanding principal of the public debt of the United States on the 1st of January of each year from 1791 to 1843, inclusive, and on the 1st of July of each year from 1844 to 1879, inclusive.*

Year.	Amount.
Jan. 1, 1791	\$75,463,476 52
1792	77,227,924 66
1793	80,352,634 04
1794	78,427,404 77
1795	80,747,587 39
1796	83,782,172 07
1797	82,064,479 33
1798	79,228,529 12
1799	78,408,660 77
1800	82,976,294 35
1801	83,038,050 80
1802	80,712,632 25
1803	77,054,646 30
1804	80,427,120 88
1805	82,312,150 50
1806	75,723,270 06
1807	69,218,398 64
1808	65,106,317 97
1809	57,023,192 00
1810	53,178,217 52
1811	48,005,587 76
1812	45,200,737 90
1813	56,902,827 57
1814	81,487,846 24
1815	99,833,060 15
1816	127,334,933 74
1817	123,491,905 16
1818	103,466,633 83
1819	95,529,648 28
1820	91,015,566 15
1821	89,987,427 66
1822	93,546,676 96
1823	90,875,877 28
1824	90,269,777 77
1825	83,788,432 71
1826	81,054,059 99
1827	73,987,357 20
1828	67,475,043 87
1829	58,421,413 67
1830	48,565,406 50
1831	39,123,191 08
1832	24,322,235 18
1833	7,001,698 83
1834	4,760,082 08
1835	87,733 05
1836	87,513 05
1837	836,957 83
1838	3,308,124 07
1839	10,434,221 14
1840	3,573,343 82
1841	5,250,875 54
1842	13,594,480 73
1843	20,601,226 28
July 1, 1843	32,742,922 00
1844	23,461,652 50
1845	15,925,303 01
1846	15,550,202 97
1847	38,826,534 77
1848	47,044,862 23
1849	63,061,858 69
1850	63,452,773 55
1851	68,304,796 02
1852	66,190,841 71
1853	59,803,117 70
1854	42,242,222 42
1855	35,586,956 56
1856	31,972,537 90
1857	23,690,831 85
1858	44,911,881 03
1859	58,496,637 88
1860	64,842,287 68
1861	90,580,873 72
1862	524,176,412 13
1863	1,119,772,138 63
1864	1,815,784,370 57
1865	2,680,647,869 74
1866	2,773,236,173 09
1867	2,678,126,103 87
1868	2,611,687,851 19

**TABLE E.—Statement of outstanding principal of t**

\* In the amounts were stated as the outstanding principal of notes of deposit outstanding on the 30th of June, 1874, \$1,739,000, in 1873; \$58,750,000 in 1874; \$58,415,000, in 1875; \$61,735,000, in 1876; and \$30,370,000 in 1879, for which a like deposit in the Treasury for their redemption, and added certificates, as a matter of accounts, are treated as a part held on deposit for their redemption, should properly be deducted in making comparison with former years.

**Statement of the principal of the public debt, including the Treasury, on the 1st day of July of each year, compiled from the published monthly debt-statements, of**

Years.	Outstanding principal.	Accrued interest.
July 1, 1869	\$2,597,722,963 37	\$47,447,331
1870	2,601,675,127 83	50,607,331
1871	2,353,211,332 32	45,036,720 11
1872	2,253,251,328 78	41,705,270 91
1873	2,234,482,903 20	42,350,000 00
1874	2,251,680,468 43	38,939,000 00
1875	2,282,284,531 95	38,647,000 00
1876	2,180,395,067 15	33,514,000 00
1877	2,205,301,392 10	40,883,000 00
1878	2,256,205,892 53	36,404,000 00
1879	2,349,567,482 04	30,792,000 00

\*It will be noticed that there is a difference in the amount of the principal of the debt July 1, 1869, and July 1, 1870. This difference is the principal of the debt as shown by the monthly debt-statements sinking-fund and paid for from money in the Treasury, were in the cash as a cash item, or asset, and were also treated in the cash as a cash item, or asset, authority of law for deducting them from the outstanding debt of July 1, 1870, directed that these bonds should be cancelled, and the amount of each class of the outstanding debt to which they were accordingly made on the books of the department and

## PAPERS

ACCOMPANYING

### REPORT OF THE SECRETARY OF THE TREASURY.

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#### REPORT OF THE COMMISSIONER OF INTERNAL REVENUE.

TREASURY DEPARTMENT,  
OFFICE OF INTERNAL REVENUE,  
*Washington, November 24, 1879.*

**SIR:** I have the honor to submit the report of the Bureau of Internal Revenue, for the fiscal year ended June 30, 1879, accompanied by additional facts and figures bringing down the operations of this branch of the public service as nearly as possible to the present date.

It affords me great pleasure to be able to report an improved condition of the internal-revenue service: first, in regard to the receipts; second, in respect to the character and efficiency of the officers employed; third, in respect to the disposition of tax-payers to observe the laws; and, fourth, in regard to public opinion in reference to the enforcement of the laws. The marked improvement in the receipts during the past four months in the face of the great reduction of the tax on tobacco, gives promise that the receipts from internal-revenue taxes will, during the present fiscal year, reach the sum of \$115,000,000.

The one hundred and twenty-six collectors and their subordinates, as a body of officers to whom is intrusted the duty of collecting nearly \$115,000,000 of revenue, are entitled to the respect and commendation of the people and the government for their capacity, integrity, and fidelity to duty.

The great majority of the tax-payers have observed the laws, and faithfully paid their taxes, and it is believed that in the greater portion of the country violations of the internal-revenue laws are as infrequent as can reasonably be expected. And in those districts where the laws have been for years openly violated, and the officers set at defiance, there is a returning sense in the minds of a majority of the people of the duty of the tax-payers to observe the laws and of the officers of the government to enforce them.

#### RESISTANCE TO ENFORCEMENT OF THE LAWS.

It will be seen from the table on page 14, that during the last three years and four months 3,117 illicit distilleries have been seized, 6,431 persons arrested for illicit distilling, and 26 officers and employes killed and 47 wounded while engaged in enforcing the internal-revenue laws. These facts clearly show the dangerous and difficult character of the work that has been performed by our officers in the enforcement of the laws; and the fact that during the past sixteen months 1,395 illicit distilleries have been seized, 3,281 illicit distillers arrested, 4 officers and employes killed and 22 wounded while enforcing the laws, and the further fact that nearly all of these seizures, arrests, and resistance of authority are con-

fixed to the districts long infested with these troubles, indicates unmistakably that much remains to be done to place the service upon a satisfactory footing. This can only be done by constant, vigorous, and courageous efforts of repression with such a force of deputies, armed when necessary, as will demonstrate the ability and determination of the government to collect its revenues and enforce its laws. And I deem it my duty to again call your attention to the fact that the appropriations have been, and now are, inadequate to the proper enforcement of the laws.

It is well known that the manufacture of whisky with small stills has been long practiced by many persons in a number of States. A tax of 90 cents a gallon on this product is a great temptation to fraud. It has been found that in many portions of the country, especially in mountainous regions, distillers will league together for the purpose of avoiding the payment of the tax and resisting the officers of the United States engaged in the enforcement of the laws.

In making the distribution of the appropriation to collectors and their subordinates for the collection of the revenue and for policing all the States and Territories of the Union for the purpose of preventing and detecting frauds, it is found necessary, as a rule, to assign large areas of territory to each deputy collector, the size of the division being mainly determined by the number of manufacturers and dealers engaged in the production and sale of taxable articles. In the great majority of these divisions the deputy collectors perform their duties without molestation or resistance, so that in numerous cases as many as five or ten counties are assigned to a single deputy collector. In those collection-districts where illicit distilling is rife, experience has shown that the combinations of these violators of the law have for years been such as to set the ordinary force of officers at defiance, so that three years ago many experienced and intelligent officers had come to the conclusion that the fraud of illicit distilling was an evil too firmly established to be uprooted, and that it must be endured. The efforts of the past three years, although begun and continued with insufficient appropriations, have given such results as to show conclusively that, with a proper appropriation for this service, these frauds can be eradicated and resistance to the laws overborne.

The appropriations being insufficient to employ permanently the proper number of deputies for operations against illicit distillers, I have from time to time authorized collectors to employ a temporary force to aid the regular deputies in policing their divisions and seizing illicit distilleries, and it has been found necessary to provide many collectors with guns from the Ordnance Department of the government to enable them to arm their deputies for self-defense. It has been through the organization of these parties that collectors have been enabled to seize so many illicit distilleries, and to overcome the resistance which has on so many occasions been offered by combinations of illicit distillers.

It is in the interest of the government, whose laws are violated and whose revenues are withheld; it is in the interest of the public, whose peace is disturbed and whose morals are debauched; and it is in the interest of the officers of internal revenue, whose lives are endangered while enforcing the laws, that sufficient appropriations should be made to provide an ample force to suppress illicit distilling wherever found, and to police the infected country so as to prevent a recurrence of these demoralizing frauds, and I therefore have the honor to recommend the appropriation of \$100,000 as a deficiency, for the present fiscal year for this service.

I have directed the collectors in these infected districts to encourage the establishment of legal distilleries as an additional means of eradicating the evil of illicit distilling. This has been found to work well, 255 distilleries having been established in illicit distilling districts during the past fiscal year. This course has worked a material change with the public at large and with persons in the habit of distilling favorable to the observance of law, and if suitable appropriations are made to allow the employment of a sufficient number of deputy collectors to make thorough and frequent canvass of the districts, I am satisfied that within a year or two frauds against the revenue will be to a great extent broken up, and an orderly and peaceable administration of the laws established. The increase in the number of legal distilleries will materially augment the expense for storekeepers and gaugers, and will make it necessary that a deficiency appropriation be made for the present fiscal year of two hundred thousand dollars.

#### LEGISLATION FOR PROTECTION OF REVENUE OFFICERS.

I again call attention to the fact that in very few cases have the State courts taken cognizance of the murders and assaults committed upon the persons of the officers and employés of the government.

The penalties provided by law for murder and assault to murder are intended, amongst other things, for the protection of the citizen in life and limb. When, in a particular class of cases, the laws are rarely enforced, it is evident that they fall short of accomplishing one of their important purposes. This is obviously the case in respect to officers of the United States engaged in the enforcement of the internal-revenue laws. It is clear to my mind that in some portions of the country, for a considerable time to come, reliance cannot be placed upon the State courts for punishing citizens who commit murder or assaults to murder upon our officers while engaged in the performance of their duties. It seems to me of the utmost importance that the United States should, under its own laws and through its own courts, undertake the trial and punishment of persons who are guilty of murder and assault to murder of officers while engaged in or on account of the performance of their official duties, and I have the honor of renewing the recommendation made in my last annual report for the passage of such a law by Congress.

#### TAX UPON CIRCULATING NOTES OF CORPORATIONS AND INDIVIDUALS.

During the past two years assessments amounting to \$193,743.53 have been made against various corporations and individuals upon circulating notes issued in derogation of sections 3412 and 3413 U. S. Revised Statutes, and sections 19 and 20 of the act of February 8, 1875. There seems to be a growing disposition in many parts of the country upon the part of individuals and corporations to issue notes to be used as a local circulation, payable either in money or trade. Experience has shown that such issues are a "delusive and pernicious substitute for cash." The laws in question seem to be the only protection the people have against a flood of these insecure and dangerous notes, and in my opinion they should not be repealed.

#### PUBLICATIONS.

Since my last annual report I have caused to be prepared and printed a compilation of the internal-revenue laws and other statutes connected

therewith, which has been distributed for the use of United States judges, district attorneys, marshals, and officers of internal revenue. It is believed to be an accurate reproduction of the living law up to and including the acts of the last session of Congress, and I have no doubt will be of great public value. I am indebted mainly to the services of W. H. Armstrong, esq., and C. W. Eldridge, of the internal-revenue service, for the production of this work. I have also caused to be prepared and printed since my last annual report a revision of the Revenue Agents' Manual, which has been considerably enlarged. The former volume was so well received by the service that this volume has been printed in sufficient quantities to supply all the officers of internal revenue, and has been entitled the Internal Revenue Manual. I am indebted to Revenue Agent F. D. Sewall and C. W. Eldridge, esq., mainly for the preparation of this work.

#### DEFICIENCY TAXES UPON SPIRITS WITHDRAWN FOR EXPORTATION.

Under the existing law spirits intended for exportation are gauged before their withdrawal from the bonded warehouse, and are again gauged at the port of export when they are about to be laden upon a foreign-bound vessel, and the distiller or exporter is required to pay a tax of 90 cents per gallon upon any deficiency that may be found between the first and second gauges. These taxes are greatly complained of by the distillers and others engaged in the export trade. This law was undoubtedly designed for, and has had the effect of, preventing frauds in connection with the exportation of distilled spirits. It is, however, well known that it is next to impossible to so prepare wooden packages as to prevent a certain amount of evaporation in the course of transportation over a long line, especially in hot weather, and I fully recognize the hardship of requiring the distiller to pay tax upon spirits which have been lost by evaporation in the course of transportation.

The intent of the internal-revenue laws is to levy a tax of 90 cents a gallon upon spirits which are manufactured for and actually go into consumption in this country, and the tax in question is evidently not intended for revenue, but as a restrictive measure to prevent fraud.

These taxes have in many instances amounted to a reasonable profit on the sale of the spirits, and have therefore been felt as a great burden by the distillers. Where the spirits are withdrawn in good faith for exportation, and due diligence is exercised in their transportation, and losses occur by evaporation or accident in transportation without fraud or negligence on the part of the distiller, owner, or transportation company, or their agents, in my judgment no tax should be levied for any such loss. Such a tax necessarily discourages the exportation of American distilled spirits, and would seem to be contrary to sound public policy; and I have the honor to recommend that existing laws be so amended as to provide that taxes shall not be assessed for deficiencies occurring under the circumstances named. I would also recommend that provision of law be made for the exportation of alcohol in metallic cans of ten gallons and upwards.

#### BONDED WAREHOUSES, FOR PEACH AND APPLE BRANDY.

Distillers of brandy from grapes were, by the act of March 3, 1877, allowed to store their product for three years in bonded warehouse before payment of tax thereon; and I suggest for the consideration of Congress the expediency of according the same privilege to distillers of brandy from apples and peaches.

The latter is now the only class of distillers not having the option of three years' storage of their product before payment of tax, and the reasons for granting them the privilege are the same which induced its extension in the case of grain and grape-brandy distillers, and are such as operate with especial force in the case of all distillers of fruit.

The necessity for time to ripen the spirits sufficiently to give them a value remunerative to the producer, and for opportunity to obtain a favorable market is really more urgent than with grain distillers.

Under authority of the statute in that respect, I have already enlarged the time for the collection of this tax, in default of payment, to four months from the date when the same is payable; but I have not deemed it best to give further credit without the custody of the spirits as security.

The extension of the warehouse system to this class of distillers would occasion a considerable increase in the annual appropriation for pay of storekeepers; but some compensation for this outlay may, perhaps, be found in an increase in production when production no longer requires an immediate raising of money to meet the tax or else a sale of the product at unsatisfactory prices.

#### RECEIPTS FOR FIRST FOUR MONTHS OF PRESENT FISCAL YEAR.

The following table shows the receipts from the several sources of revenue for the first four months of the current fiscal year. The receipts for the corresponding period in the last fiscal year and a comparison of the receipts for the two periods are also given:

Sources of revenue.	Receipts from July 1, 1878, to October 31, 1878.	Receipts from July 1, 1879, to October 31, 1879.	Increase.	Decrease.
<b>SPIRITS.</b>				
Brandy distilled from apples, peaches, or grapes	\$257,034 56	\$260,975 05	\$12,940 49	.....
Spirits distilled from materials other than apples, peaches, or grapes	15,621,150 41	18,242,981 09	2,621,830 68	.....
Wine made in imitation of champagne, &c.				
Rectifiers (special tax)	15,950 08	12,012 53		\$3,937 55
Dealers, retail liquor (special tax)	345,582 50	343,021 18		2,561 32
Dealers, wholesale liquor (special tax)	86,830 92	27,720 58		8,610 34
Manufacturers of stills, and stills or worms manufactured (special tax)	1,050 43	1,235 02	184 59	.....
Stamps for distilled spirits intended for export	8,815 90	8,942 30	126 30	.....
Stamps—warehouse, rectifiers, and dealers	84,184 80	100,792 80	16,608 00	.....
Interest on tax upon spirits	12,485 70	51,721 54	39,235 84	.....
<b>Total</b>	<b>16,877,584 80</b>	<b>19,053,401 49</b>	<b>2,675,816 69</b>	.....
<b>TOBACCO.</b>				
Cigars, cheroots, and cigarettes	4,482,744 67	4,984,850 65	502,105 98	.....
Manufacturers of cigars (special tax)	9,956 67	7,854 24		2,102 83
Snuff	391,771 04	285,307 26		106,463 78
Tobacco of all descriptions	10,002,970 71	7,822,835 09		2,180,135 62
Stamps for tobacco or snuff intended for export	2,932 30	2,081 30		851 00
Dealers in leaf tobacco (special tax)	7,829 44	5,346 96		2,482 48
Retail dealers in leaf tobacco (special tax)	1,008 60	520 83		487 77
Dealers in manufactured tobacco (special tax)	152,617 68	166,388 52	13,770 84	.....
Manufacturers of tobacco (special tax)	700 88	704 63	3 75	.....
Peddlers of tobacco (special tax)	4,663 24	4,114 34		548 90
<b>Total</b>	<b>18,057,190 18</b>	<b>18,280,008 82</b>		<b>1,827,186 81</b>



# REPORT OF THE SECRETARY OF

## PRODUCTION OF SPIRITS DURING

The quantity of spirits, 71,892,621 gallons, at distillery warehouses during the fiscal year, is greater than the quantity produced during any year, an approximation to this product was that of the year 1870, which was 71,337,099 gallons.

The production of the fiscal year 1870 was 54,576,446 gallons in 1871, and it might be expected that the product of the year 1880 would fall below this; but it is considered that 14,837,581 gallons of spirits were consumed in the year 1879, and that the foreign demand is so great that the large product for the early portion of the year.

As compared with the fiscal year 1878, the increase in the fiscal year 1879 is 15,789,568 gallons. This increase is in the different varieties known to the trade, except

Increased production of—

Bourbon whisky .....	.....
Rye whisky .....	.....
Alcohol .....	.....
Rum .....	.....
Gin .....	.....
Pure, neutral, or cologne spirits .....	.....
Miscellaneous .....	.....

Total increase .....	.....
Decrease in highwines .....	.....

Net increase .....

## PRODUCTION AND MOVEMENT OF SPIRITS DURING THE FIRST MONTHS OF THE PRESENT FISCAL YEAR

The following table shows the production of spirits during four months of the present fiscal year, compared with the production of the same months of the foreign demand of last year is steadily maintained. The production is 2,719,148 gallons greater than for the corresponding months of last year, and the withdrawals 2,958,950 gallons greater than for the same months of last year. If the business of these four months be taken as the balance of the fiscal year, the production would be 14,837,581 millions of gallons, and the amount of tax received would be three-quarters millions of dollars.

Months.	Produced.	Withdrawn for export.
	Gallons.	Gallons.
July, 1879 .....	4,506,116	583,574
August, 1879 .....	4,750,549	675,582
September, 1879 .....	5,783,380	934,621
October, 1879 .....	6,755,703	1,015,353
Total .....	21,795,748	3,209,130

Increase over 1878.

July .....	.....
August .....	.....
September .....	.....
October .....	.....
Total .....	.....

## SPIRITS AND TOBACCO REMOVED IN BOND FOR EXPORT.

The following statement shows the quantity and percentage of production of distilled spirits and manufactured tobacco (including snuff) removed in bond for export during each fiscal year since the passage of the act of June 6, 1872:

Year.	Distilled spirits.		Year.	Manufactured tobacco.	
	Taxable (proof) gallons exported.	Percentage of production.		Pounds of tobacco exported.	Percentage of production.
1873.....	2,358,630	3.45+	1873.....	10,110,045	8.59+
1874.....	4,060,160	5.90+	1874.....	10,800,927	9.11+
1875.....	587,413	0.96+	1875.....	9,179,316	7.13+
1876.....	1,308,900	2.25+	1876.....	9,434,485	7.87+
1877.....	2,529,528	4.22+	1877.....	11,335,046	8.88+
1878.....	5,499,252	9.80+	1878.....	10,581,744	8.89+
1879.....	14,837,581	20.63+	1879.....	11,034,951	8.62+
Total.....	31,181,464	.....	Total.....	72,476,514	.....

## SPIRITS WITHDRAWN FOR EXPORT DURING FIRST FOUR MONTHS OF PRESENT FISCAL YEAR.

*Statement, by districts, of the quantity in taxable gallons, and different kinds of spirits, withdrawn for export during the four months ended November 1, 1879.*

Districts.	Alcohol.	Rum.
	Gallons.	Gallons.
1 Illinois.....	513,097	.....
3 Illinois.....	128,505	.....
5 Illinois.....	1,436,534	.....
8 Illinois.....	214,380	.....
1 Indiana.....	25,913	.....
7 Indiana.....	394,839	.....
3 Massachusetts.....	.....	84,000
5 Massachusetts.....	.....	369,840
Nebraska.....	20,134	.....
1 Ohio.....	17,436	.....
1 Wisconsin.....	4,404	.....
Total.....	2,755,242	453,900

# REPORT OF THE SECRETARY OF THE SPIRITS WITHDRAWN FOR EXPORT DURING FIRST LAST THREE FISCAL YEARS.

*Statement, by districts, of the quantity, in taxable gallons drawn for export during the four months ended November 1, 1878, and November 1, 1879.*

Districts.	1877.
	<i>Gallons</i>
1 Illinois .....	165, 37
2 Illinois .....	43, 04
3 Illinois .....	218, 47
4 Illinois .....	
1 Indiana .....	
4 Indiana .....	6, 37
7 Indiana .....	
5 Kentucky .....	
6 Kentucky .....	1, 07
7 Kentucky .....	
8 Kentucky .....	
3 Maryland .....	7, 64
3 Massachusetts .....	26, 27
5 Massachusetts .....	289, 36
1 Missouri .....	
Nebraska .....	5, 08
1 New York .....	
1 Ohio .....	21, 46
3 Ohio .....	2, 47
1 Wisconsin .....	
Total .....	787, 47

## EXPORTATION OF DISTILLED SPIRITS

The following figures show the increase or decrease in kinds of spirits exported in the year 1879 as compared with 1878:

Increase in alcohol .....	
Increase in rum .....	
Increase in Bourbon whisky .....	
Increase in pure, neutral, or cologne spirits .....	
Increase in miscellaneous .....	
Total increase .....	
Decrease in rye whisky .....	
Decrease in corn whisky .....	
Decrease in highwines .....	
Total decrease .....	
Net increase .....	

The bulk of the spirits exported in both fiscal years was alcohol produced in the northern part of Illinois, bound vessels at New York, and consigned to Marseilles, and in the fiscal year 1879 to forty-three ports in Africa. The total number of ports to which were exported during the fiscal year 1878 was thirty, the fiscal year 1879 the number was increased to six respectively, in North America, South America, Europe, Australia, and the islands of the Atlantic, Pacific,

The exportation of spirits having nearly trebled in amount during the year 1879 as compared with the year 1878, it is apparent that the increase in such exportations has kept pace with that of other American products. As the principal increased demand for American spirits has been in those foreign ports in which they are best known, and as they have, during the years 1878 and 1879, become known in all parts of the world, it is anticipated that the exportations of such spirits during the current fiscal year will be still greater than those made during the fiscal year ended June 30, 1879.

During the year 1878, 5,748 gallons of high wines were withdrawn for exportation; in 1879 none were withdrawn for this purpose. In 1878 no pure, neutral, or cologne spirits were withdrawn for exportation, while in 1879 the quantity of such spirits withdrawn for such purpose was 37,685 gallons. Almost the entire increase, 9,354,989 gallons, in the quantity of spirits exported in 1879 consisted of those varieties which had been subjected to the several processes of distilling, redistilling, purifying, and refining before being deposited in the distillery warehouse. (See preceding tabular statement, showing the different kinds of spirits as known to the trade produced, withdrawn for various purposes during the year and in warehouse at the beginning and close of the year.) Additional facilities for maintaining and perfecting the security afforded by the lien on the spirits and by the warehousing bonds have also been provided by legislation during the year. Upon the recommendation of this office the following provisions were inserted in the internal-revenue act of March 1, 1879:

A new bond shall be required in case of the death, insolvency, or removal of either of the sureties, and may be required in any other contingency affecting its validity or impairing its efficiency, at the discretion of the Commissioner of Internal Revenue. And in case the distiller or owner fails or refuses to give the bond hereinbefore required, or to renew the same, or neglects to immediately withdraw the spirits and pay the tax thereon, or if he neglects to withdraw any bonded spirits and pay the tax thereon before the expiration of the time limited in the bond, the collector shall proceed to collect the tax by distraint, issuing his warrant of distraint for the amount of tax found to be due, as ascertained by him from the report of the ganger if no bond was given, or from the terms of the bond if a bond was given. But this provision shall not exclude any other remedy or proceeding provided by law.

If it shall appear at any time that there has been a loss of distilled spirits from a cask or other package hereafter deposited in a distillery warehouse, other than the loss provided for in section three thousand two hundred and twenty-one of the Revised Statutes of the United States, which, in the opinion of the Commissioner of Internal Revenue, is excessive, he may instruct the collector of the district in which the loss has occurred, to require the withdrawal from warehouse of such spirits, and to collect the tax accrued upon the original quantity of distilled spirits entered into the warehouse in such cask or package, together with the interest accrued thereon, if any, notwithstanding that the time specified in any bond given for the withdrawal of the spirits entered into warehouse in such cask or package has not expired. If the said tax and interest are not paid on demand, the collector shall report the amount due upon his next monthly list, and it shall be assessed and collected as other taxes are assessed and collected.

#### SPIRITS WITHDRAWN FROM DISTILLERY WAREHOUSES ON PAYMENT OF THE TAX.

	Gallon
In 1878 .....	49,571, 1
In 1879 .....	51,885, 9
Increase .....	<u>2,314, 8</u>

# REPORT OF THE SECRETARY OF

This increase is distributed among the trade, except the kinds known as "highwines"

Bourbon whisky .....	-
Rye whisky .....	-
Alcohol .....	-
Wine .....	-
Pure, neutral, or cologne spirits.....	-
Miscellaneous.....	-

Total increase .....

Decrease in withdrawals of—

Old .....	-
Highwines.....	-

Total decrease .....

Net increase in withdrawals tax-paid .....

The amount of interest-tax collected during the period of the joint resolution of Congress from 1877 to three years was \$74,899.48. March 28, 1878, the year ended June 30, 1878, the year during which the act has been in force, for the year indicate that a revenue of about \$100,000 per annum will be derived from this source. In my mind, however, as indicating that the annual amount collected may be greater, that no three-year-old spirits withdrawn, the oldest spirits at any time in the year being the product of the month of March, 1878, the stock of old spirits in warehouse July 1, 1878, during the year following, the quantity of spirits withdrawn, the oldest spirits at any time in the year being the product of the month of March, 1878, the stock of old spirits in warehouse July 1, 1879, exceeded the quantity of such spirits in warehouse July 1, 1878, very nearly two and July 1, 1879, 5,717,916 gallons.

The quantity of each month's product in which was withdrawn during the year ended June 30, 1878, the following tabular statement:

Product of the month of—	In warehouse July 1, 1878.
	Gallons.
1877.	
March .....	700, 3
April .....	1, 005, 3
May .....	1, 154, 3
June .....	747, 3
July .....	274, 3
August .....	127, 3
September .....	133, 3
October .....	142, 3
November .....	314, 3
December .....	697, 7
1878.	
January .....	1, 230, 5
February .....	1, 114, 1
March .....	1, 640, 7
April .....	1, 704, 4
May .....	1, 052, 5
June .....	1, 350, 0
Total .....	14, 088, 773

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Rye whisky .....  
Alcohol .....  
Gum .....  
Pure, neutral, or cologne spirits .....  
Miscellaneous .....

Total increase .....

Decrease in withdrawals of—

Gin .....  
Highwines .....

Total decrease .....

Net increase in withdrawals tax-paid .....

The amount of interest-tax collected during  
visions of the joint resolution of Congress ex  
period to three years was \$74,899.48. As  
March 28, 1878, the year ended June 30, 187  
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The quantity of each month's product in  
which was withdrawn during the year ended J  
the following tabular statement:

Product of the month of—		In warehouse July 1, 1878.
1877.		Gallons.
March .....		709, 3
April .....		1, 095, 6
May .....		1, 154, 6
June .....		747, 6
July .....		274, 3
August .....		127, 8
September .....		135, 8
October .....		142, 0
November .....		314, 6
December .....		697, 7
1878.		
January .....		1, 230, 5
February .....		1, 114, 1
March .....		1, 540, 7
April .....		1, 704, 4
May .....		1, 652, 9
June .....		1, 350, 0
Total .....		14, 088, 773

## TRANSFERS OF SPIRITS TO MANUFACTURING WAREHOUSES.

Section 20 of the internal revenue act of March 1, 1879, provides "that under such regulations and requirements as to stamps, bonds, and other security as shall be prescribed by the Commissioner of Internal Revenue, any manufacturer of perfumery, medicines, or preparations for export, manufacturing the same in a duly constituted manufacturing warehouse, shall be authorized to withdraw, in original packages from any distillery warehouse, so much alcohol as he may require for the said purpose, without the payment of the internal-revenue tax thereon."

The manufacturing warehouses to which alcohol may be transferred under the provision of the above-quoted section are those established under authority conferred by section 3433 of the Revised Statutes for the manufacture of perfumery, medicines, or preparations for export free of tax or duty. The quantity of alcohol removed after the passage of the act and before the end of the fiscal year 1879 was 13,213 gallons. Several large lots have already been transferred to these warehouses during the current year, and it is evident that hereafter the alcohol used in such warehouses will be of American manufacture, and not, as heretofore, of foreign production. If the law were so amended as to allow the withdrawal without the payment of tax of all kinds of spirits to be used in such manufacturing warehouses for all purposes authorized by law, a large export demand would spring up for cordials and other mixed liquors produced in such manufacturing warehouses.

The quantity of alcohol transferred to manufacturing warehouse during four months ended November 1, 1879, was as follows:

	Gallons.
From 5 Illinois .....	69,938
From 1 Missouri .....	4,286
Total .....	74,224

SPIRITS WITHDRAWN FROM WAREHOUSE FOR SCIENTIFIC PURPOSES,  
AND FOR THE USE OF THE UNITED STATES.

The quantity of alcohol withdrawn free of tax from distillery warehouses for the use of colleges and other institutions of learning in the preservation of specimens of natural history in their several museums, or for use in their chemical laboratories, and of spirits of various kinds for the use of the United States, amounted during the year to 17,686 gallons. The spirits withdrawn for the use of the United States were mainly upon requisitions made by the Surgeon-General of the Army and by the Secretary of the American Fish Commission.

## SPIRITS LOST BY CASUALTY DURING THE YEAR.

The quantity of spirits in distillery warehouses at the beginning of the year was 14,088,773 gallons, and the quantity deposited during the year was 71,892,621 gallons, making a total of 85,981,394 gallons which was on deposit therein during the year. Of this quantity, 14,505 gallons—less than one-fiftieth of 1 per cent.—was lost by casualty; that is to say, only one gallon of each 5,928 gallons was so lost. The credit of having preserved this immense quantity of highly inflammable property almost intact, is due alike to the distiller and to the internal-revenue store-keeper, as the distillery warehouses in which it is stored are in their joint custody.



During the early part of the calendar year 1877 a special examination of all distillery warehouses was made, and such examinations have been made during the years 1878 and 1879. It is noted in this connection, that the annual losses by casualty have been much less than during the years immediately preceding. These losses during the years 1875-'76-'77-'78-'79, are shown in the following table:

	Gallons.
1875 .....	156,877
1876 .....	100,855
1877 .....	2,984
1878 .....	7,307
1879 .....	14,505

The quantity of spirits lost by casualty on which the tax was abated during the year under the provisions of sections 3221, 3222, and 3223 of the Revised Statutes was 7,374 gallons.

These sections of the law were amended by sections 3 and 6 of the act of March 1, 1879, section 3221 being amended so as to extend its provisions to spirits thereafter destroyed by accidental fire or other casualty, without any fraud, collusion, or negligence of the owner thereof after the time when the spirits should have been drawn off by the gauger and placed in the distillery warehouse; and section 3223 being amended so as to provide that when the owners of distilled spirits, in the cases provided for by sections 3221 and 3222, may be indemnified against the tax by a valid claim of insurance for a sum greater than the actual value of the spirits before and without the tax being paid, the tax shall not be remitted to the extent of such insurance.

#### SPIRITS REMAINING IN WAREHOUSE AT THE CLOSE OF THE YEAR.

The quantity—19,212,470 gallons—of spirits remaining in distillery warehouses June 30, 1879, was greater than the quantity in warehouse June 30, 1878, by 5,123,697 gallons, and, in fact, exceeded the quantity in warehouse at the close of any preceding fiscal year, the quantity so remaining at the close of each year during which spirits have been stored in such warehouses being as follows:

	Gallons.
Quantity remaining June 30, 1869 .....	16,685,166
Quantity remaining June 30, 1870 .....	11,671,886
Quantity remaining June 30, 1871 .....	6,744,360
Quantity remaining June 30, 1872 .....	10,103,392
Quantity remaining June 30, 1873 .....	14,650,148
Quantity remaining June 30, 1874 .....	15,575,224
Quantity remaining June 30, 1875 .....	13,179,596
Quantity remaining June 30, 1876 .....	12,595,850
Quantity remaining June 30, 1877 .....	13,091,773
Quantity remaining June 30, 1878 .....	14,088,773
Quantity remaining June 30, 1879 .....	19,212,470

Certain facts operating as causes of this great increase, and indicating a growing ability on the part of distillers to discharge their obligations to the government, are (1) the great increase in number of legally authorized distilleries in sections of the country very recently infested by illicit distillers, (2) the building of large and expensive distilleries in other sections, (3) the increased production of the finer grades of goods involving the introduction into the distilleries of expensive machinery for redistilling, purifying, and refining the products formerly deposited in

the warehouse in the crude state, (4) the increased foreign demand, and (5) the returning prosperity of the country.

As illustrations, the following facts are cited: In the sixth district of North Carolina the number of distillery warehouses increased from 53 July 1, 1878, to 184 June 30, 1879. In the fifth district of Illinois the largest distillery in the United States (probably in the world) was built during the year and put in operation July 21, 1879. During the fiscal year 1879, as compared with the year 1878, there was a falling off in the production and withdrawals of high wines, and an increase in production and withdrawal of certain other spirits involving greater expense in production as follows: A decrease in the production of high wines of 1,379,333 gallons and an increase in the production of all other varieties amounting in the aggregate to 17,168,901 gallons, a decrease of 2,511,898 gallons in the withdrawals of high wines on payment of tax, and an increase of 2,152,130 gallons in the withdrawals of pure neutral or cologne spirits on payment of the tax.

More than four-fifths of the spirits remaining in warehouse June 30, 1879 (16,080,757 gallons out of 19,212,470 gallons), were Bourbon and rye whiskies, and the increase in the quantity in warehouse on that day over that in warehouse June 30, 1878, was mainly due to the increase in these two varieties. There was an increase, however, in all the different kinds of spirits except gin, as follows:

	Gallons.
Increased quantity of bourbon whisky in warehouse .....	2, 549, 803
Increased quantity of rye whisky in warehouse .....	1, 904, 031
Increased quantity of alcohol in warehouse .....	60, 756
Increased quantity of rum in warehouse .....	53, 284
Increased quantity of high wines in warehouse .....	88, 617
Increased quantity of pure, neutral, or cologne spirits in warehouse .....	84, 883
Increased quantity of miscellaneous whisky in warehouse .....	397, 087
Total increase .....	5, 138, 491
Decreased quantity of gin in warehouse .....	14, 794
Net increase of spirits in warehouse .....	5, 123, 697

#### FERMENTED LIQUORS.

The receipts from fermented liquors for the fiscal years ended June 30, 1878 and 1879, are shown in the following statement:

Sources.	Receipts for fiscal year ended June 30—		Increase.	Decrease.
	1878.	1879.		
Fermented liquors, tax of \$1 per barrel on .....	\$9, 473, 360 70	\$10, 270, 252 83	\$796, 992 13	
Brewers' special tax .....	212, 802 77	202, 779 61		\$10, 023 16
Dealers in malt liquors', special tax .....	250, 888 31	256, 187 64	5, 299 33	
Total .....	9, 937, 051 78	10, 729, 220 08	792, 268 30	

The tax of \$1 per barrel on fermented liquors is paid by stamps. A deduction of  $7\frac{1}{2}$  per cent. being allowed by law on all sales of such stamps, the quantities of fermented liquors on which tax was paid for the two years were, therefore, as follows: In 1878, 10,241,471 barrels; in 1879, 11,103,084 barrels; there being an increase of 861,613 barrels, or 8 per cent.

It will be observed that there is a steady increase in the consumption of malt liquors in this country. It is an interesting fact that the foreign demand for American malt liquors is rapidly increasing. Applications for drawbacks have been applied for upon exports made to the following-named foreign ports during the fiscal year 1878-79, viz: St. John (Porto Rico), Halifax, La Guayra, Vera Cruz, Callao, St. Thomas, Honolulu, Maranhão (Brazil), Valparaíso, Hayti, Havana, Montevideo, Trinidad, Santos (Brazil), Port Spain (Trinidad), Aspinwall, Aux Cayes (Hayti).

The exportation of fermented liquors is now made with benefit of a drawback. In my opinion it would be proper to make provision of law for the exportation of this article in bond.

### TOBACCO.

The total amount of collections from tobacco in all its forms, including the internal-revenue tax upon imported tobacco, snuff, and cigars, and the special taxes paid by manufacturers of and dealers in leaf and manufactured tobacco, for the fiscal year ended June 30, 1879, was forty million one hundred and thirty-five thousand and two dollars and sixty-five cents (\$40,135,002.65). As compared with the total receipts from the same source for the preceding fiscal year, this shows an increase of forty-three thousand two hundred and forty-seven dollars and ninety-eight cents (\$43,247.98).

Considering the disturbed condition of the trade for a considerable portion of the year consequent upon the discussion of the tax question by Congress, and the reduced rate of the tax on manufactured tobacco and snuff provided by the act of March 1, 1879, which went into operation on the 1st day of May following, this result is highly satisfactory.

Statements showing the increase and decrease of revenue from each particular source of the tobacco tax for the last fiscal year, as compared with the same source for the preceding year, are given below. It will be seen from this comparison that the loss in revenue from manufactured tobacco, including snuff, resulting from the causes above stated, was made up by the increased collections from cigars, which is found to be nearly 7 per cent.

#### TOBACCO AND SNUFF.

Manufactured tobacco, at 24 cents a pound.....	\$17,963,510 99
Manufactured tobacco, at 20 cents a pound.....	11 40
Manufactured tobacco, at 16 cents a pound.....	6,740,352 51
Snuff, taxed at 32 cents a pound.....	703,835 56
Snuff, taxed at 16 cents a pound.....	193,299 79
Total for the year ended June 30, 1879.....	25,606,010 25
Total for the year ended June 30, 1878.....	26,383,872 30
Decrease of collections on tobacco and snuff.....	777,862 05

Of this decrease \$616,283.18 was on chewing and smoking tobacco, and \$161,578.87 on snuff.

## CIGARS AND CIGARETTES.

Cigars, taxed at \$6 per thousand.....	\$12, 115, 406 82
Cigars, taxed at \$5 per thousand.....	61 47
Cigarettes, taxed at \$1.75 per thousand.....	416, 984 43
Total collections for the year ended June 30, 1879.....	12, 532, 452 72
Total collections for the year ended June 30, 1878.....	11, 719, 226 39
Increase in collections from cigars and cigarettes.....	813, 226 33

## OTHER COLLECTIONS.

Export stamps, year ended June 30, 1879.....	\$7, 863 90
Export stamps, year ended June 30, 1878.....	7, 002 60
Increase in sale of export stamps.....	861 30
Dealers in manufactured tobacco, year ended June 30, 1879.....	1, 705, 720 20
Dealers in manufactured tobacco, year ended June 30, 1878.....	1, 679, 617 60
Increase in collections from dealers in manufactured tobacco.....	26, 102 60
Special taxes, manufacturers of tobacco and cigars in 1879.....	161, 435 23
Special taxes, manufacturers of tobacco and cigars in 1878.....	168, 493 23
Decreased collections, manufactured tobacco and cigars.....	7, 058 00
Special taxes, peddlers of tobacco, year ended June 30, 1879.....	31, 247 63
Special taxes, peddlers of tobacco, year ended June 30, 1878.....	32, 899 30
Decrease in collections from peddlers of tobacco.....	1, 651 67
Dealers in leaf tobacco, year ended June 30, 1879.....	90, 272 72
Dealers in leaf tobacco, year ended June 30, 1878.....	100, 643 25
Decrease in collections from dealers in leaf tobacco.....	10, 370 53

## PRODUCTION OF MANUFACTURED TOBACCO, CIGARS, ETC.

Adding to the several quantities of tobacco, snuff, and cigars removed for consumption during the fiscal year ended June 30, 1879, as computed from the amount of revenue derived therefrom, the quantities removed in bond for export, we have the following results, which show the entire production for the last fiscal year:

	Pounds.
Tobacco, taxed at 24 cents per pound.....	74, 847, 963
Tobacco, taxed at 20 cents per pound.....	57
Tobacco, taxed at 16 cents per pound.....	42, 127, 203
Total quantity removed for consumption.....	116, 975, 223
Tobacco removed in bond for export, at 24 cents.....	9, 221, 921
Tobacco removed in bond for export, at 16 cents.....	1, 792, 177
Total product of tobacco.....	127, 989, 321
Snuff, taxed at 32 cents a pound.....	2, 215, 111
Snuff, taxed at 16 cents a pound.....	1, 208, 124
Snuff removed for consumption.....	3, 423, 235
Snuff removed in bond for export, at 32 cents.....	20, 853
Total product of snuff.....	3, 444, 088
Total production of tobacco and snuff for the year ended June 30, 1879..	131, 433, 409
Total production for year ended June 30, 1878.....	119, 406, 588
Increase of production.....	12, 026, 821

Had the same quantity of manufactured tobacco, removed for consumption, to wit, 116,975,223 pounds, paid the uniform tax of 24 cents a pound, the revenue derived therefrom would have been \$28,074,053.52, or \$3,370,178.71 more than was actually received under the reduced rate; and the receipts from snuff, at the uniform rate of 32 cents a pound, would have been \$1,095,435.20, or \$193,299.85 more than was received, making a total difference of \$3,563,478.56.

#### PRODUCTION OF CIGARS AND CIGARETTES.

	Numbers.
Cigars, cheroots, &c., taxed at \$6 per thousand .....	2, 019, 234, 470
Cigars, cheroots, &c., taxed at \$5 per thousand .....	12, 294
Cigarettes, taxed at \$1.75 per thousand .....	238, 276, 817
Cigars exported .....	3, 031, 500
Cigarettes exported .....	15, 979, 000
Total product for fiscal year 1879 .....	2, 276, 534, 081
Total product for fiscal year 1878 .....	2, 082, 356, 362
Increase during fiscal year 1879 of .....	194, 177, 719

#### IMPORTED CIGARS.

The cigars imported during the fiscal year ended June 30, 1879, as given by the Bureau of Statistics—

	Pounds.
Aggregated in weight .....	619, 280
Of this quantity there were exported .....	70, 282
Leaving to be withdrawn for consumption .....	548, 998
Allowing 13½ pounds to the thousand as the weight of imported cigars, the number of imported cigars included in the above table would be...	40, 666, 518
Number withdrawn in 1878 was .....	42, 001, 000
Decrease during year 1879 was .....	1, 334, 482

#### LEAF TOBACCO.

Assuming that for every one hundred pounds of leaf tobacco used in the manufacture of tobacco and snuff, eighty-five pounds of manufactured products have resulted; and that for every one thousand cigars manufactured, twenty-five pounds of leaf tobacco were used; and that for every thousand cigarettes made, five pounds of leaf tobacco were required; the leaf tobacco used during the fiscal year ended June 30, 1879, for manufacturing tobacco, snuff, and cigars, aggregated in pounds as follows:

For manufacturing tobacco and snuff .....	154, 627, 540
For manufacturing cigars and cigarettes .....	51, 828, 236
Total leaf manufactured .....	206, 455, 776
Deduct imported leaf used .....	6, 221, 862
Total domestic leaf used .....	200, 233, 914
Leaf exported during fiscal year 1879 .....	322, 279, 540
Total leaf accounted for .....	522, 513, 454

## EXPORTATION OF MANUFACTURED TOBACCO AND SNUFF IN BOND.

The subjoined table shows, as removed and unaccounted for July 1, 1878, and July 1, 1879, the quantity, in pounds, of manufactured tobacco and snuff which had been removed for exportation in bond, and concerning which the proofs of landing at a foreign port had not been furnished prior to the dates named.

1. *Removed and unaccounted for July 1, 1878.*

	Pounds.	Pounds.
Tobacco, at 20 cents tax .....	83,911.50	
Bonds remaining in hands of district attorneys.....	17,094.00	
Tobacco, at 24 cents, removed under exportation bonds ..	4,448,373.75	
Tobacco, at 24 cents, removed under transportation bonds..	534,290.50	
Snuff, at 32 cents, removed under exportation bonds....	5,576.00	
		<u>5,091,245.75</u>

2. *Removed during the year ended June 30, 1879.*

Tobacco, at 24 cents tax .....	9,215,572.25	
Tobacco, at 24 cents tax (excess) .....	6,349.00	
Tobacco, at 16 cents tax.....	1,792,177.50	
Snuff, at 32 cents tax.....	20,852.75	
		<u>11,034,951.50</u>
		<u>16,126,197.25</u>

3. *Exported and during the year accounted for.*

Tobacco, at 20 cents tax.....	46,336.50	
Tobacco, at 24 cents tax .....	10,681,376.50	
Tobacco, at 24 cents tax, paid on deficiencies .....	1,610.00	
Tobacco, at 16 cents tax .....	13,527.00	
Snuff, at 32 cents tax.....	24,702.75	
		<u>10,767,552.75</u>

4. *Remaining unaccounted for June 30, 1879.*

Tobacco, at 20 cents tax.....	39,575.00	
Bonds remaining in hands of district attorneys.....	17,094.00	
Tobacco, at 24 cents, removed under exportation bonds..	3,047,262.50	
Tobacco, at 24 cents, removed under transportation bonds..	474,336.50	
Tobacco, at 16 cents, removed under exportation bonds..	1,673,900.00	
Tobacco, at 16 cents, removed under transportation bonds..	104,750.50	
Snuff, at 32 cents, removed under exportation bonds....	1,642.00	
Snuff, at 32 cents, removed under transportation bonds..	84.00	
		<u>5,358,644.50</u>
		<u>16,126,197.25</u>

The quantity removed from manufactories for exportation during the fiscal year ended June 30, 1879, is 453,207.13 pounds more than that removed during the fiscal year ended June 30, 1878.

## EXPORTATION OF CIGARS AND CIGARETTES IN BOND.

1. *Removed and unaccounted for July 1, 1878.*

	Numbers.	Numbers.
Cigars, at \$6 per M tax .....	1,041,050	
Cigarettes, at \$1.75 per M tax.....	2,485,500	
		<u>3,526,550</u>

2. Removed during the year ended *June* 30, 1879.

	Numbers.	Numbers.
Cigars, at \$6 per M tax.....	3, 031, 500	
Cigarettes, at \$1.75 per M tax.....	15, 979, 000	
		19, 010, 500
		22, 537, 050

3. Exported and accounted for during the year ended *June* 30, 1879.

Cigars, at \$6 per M tax.....	3, 050, 675	
Tax paid on deficiencies, at \$6 per M tax.....	2, 500	
Cigarettes, at \$1.75 per M tax.....	11, 280, 000	
		14, 333, 175

4. Remaining unaccounted for *June* 30, 1879.

Cigars, at \$6 per M tax.....	1, 019, 375	
Cigarettes, at \$1.75 per M tax.....	7, 184, 500	
		8, 203, 875
		22, 537, 050

## DATE OF BONDS REMAINING UNACCOUNTED FOR.

The years in which the bonds were given for the exportation of tobacco, snuff, cigars, and cigarettes remaining unaccounted for by evidence of landing, June 30, 1879, are as follows:

Year.	Tobacco.	Snuff.	Cigars.	Cigaret
	Pounds.	Pounds.	Numbers.	Numb
1872.....	17, 004			
1873.....	38, 077			
1874.....	68, 250			
1875.....	100, 661			
1876.....	170, 474			
1877.....	1, 254, 841		2, 000	
1878.....	3, 619, 514	466	270, 050	
1879.....		1, 260	747, 325	6
Total.....	5, 358, 018	1, 726	1, 019, 375	7

## THE EXPORTATION OF PROPRIETARY ARTICLES IN BOND

Under the provisions of section 19 of the internal-revenue act of 1. 1879, the privilege enjoyed by manufacturers of friction-match lights, and wax-tapers of exporting their products in bond free was extended to the manufacturers of all other articles as enumerated in Schedule A, following section 3437 of the Statutes.

The tax on the articles so withdrawn, including friction amounted to \$288,200.56. The tax on the same accounted for during the year was \$278,063.32, leaving a balance unfor by landing certificates July 1, 1879, of \$10,146.24.

# OPERATIONS AT SPECIAL BONDED WAREHOUSES FOR STORAGE OF GRAPE BRANDY.

The following statement shows the quantity of grape brandy placed in special bonded warehouses, withdrawn therefrom, and remaining therein at the beginning and close of the fiscal year ended June 30, 1879, in taxable gallons:

	Gallons.	Gallons.	Gallons
Remaining in warehouse July 1, 1878:			
First district of California .....	86,819		
Fourth district of California .....	48,806	135,625	
Removed for exportation and unaccounted for July 1, 1878:			
First district of California .....		383	
			136,008
Produced and bonded during the year:			
Produced and warehoused in first district of California .....		20,090	
Produced and warehoused in fourth district of California .....	40,352		
Produced in fourth district and warehoused in first district .....	8,898		
		49,250	69,340
			205,348
Exported and accounted for during the year:			
First district of California .....		904	
Removed tax-paid during the year:			
First district of California .....	48,233		
First district of California (deficiencies) .....	16		
Fourth district of California .....	47,047		
		95,296	96,290
Removed for export and unaccounted for June 30, 1879:			
First district of California .....		1,974	
Remaining in warehouses June 30, 1879:			
First district of California .....	72,561		
Fourth district of California .....	34,523		
		107,084	109,053
			205,348

Of the quantity in warehouse June 30, 1879, 72,561 gallons were in the following-named warehouses located in the first district of California, viz: No. 1, Bode and Danforth, 43,574 gallons; No. 2, Juan Bernard, 19,772 gallons; No. 3, George C. Carlon, 9,215 gallons; and 34,523 gallons were in the following-named warehouses in the fourth district of California, viz: No. 1, George Lichthart, 16,941 gallons; No. 2, John F. Boyce, 4,070 gallons; No. 3, Royal A. Haskins, 8,563 gallons; No. 4, John Tiven 4,949 gallons.

## DRAWBACKS.

Statement of drawback of internal-revenue taxes allowed during the fiscal year 1879 on exported merchandise.

Port of export.	No. of claims.	Proprietary articles.	Distilled spirits.	Tobacco.	Cigars.	Fermented liquors.	Total.
Albany .....	2	\$108 30					\$108 30
Baltimore .....	7	119 23		\$1,271 16	\$60 00		1,450 39
Boston .....	75	8,120 57		271 08			8,391 65
New York .....	584	30,814 01		6,057 84	79 20	\$263 02	37,215 27
Philadelphia .....	37	3,219 78		774 12			3,993 90
Rochester .....	1	15 53					15 53
San Francisco .....	23	712 80	\$1,426 92	3,739 66	111 00		5,900 38
Saint Louis .....	12					270 07	270 07
Suspension Bridge .....	1	15 53					15 53
Troy .....	3	58 32					58 32
Total .....	744	43,184 71	1,426 92	12,113 86	250 20	533 69	57,509 38
Allowed, 1878 .....	562	33,820 54	718 90	2,537 98		46 25	37,123 67



# REPORT OF THE SECRETARY OF THE

## COLLECTIONS ON CAPITAL AND DEPOS

*Statement of the amount of taxes collected on the banks and bankers during the fiscal year ended*

From the annexed statement it will be seen that \$3,184,980.30 has been realized by the tax on the banks and bankers during the last fiscal year.

States and Territories.	Capital of—	
	Savings-banks.	Other banks and bank
Alabama .....	- - -	\$5,542
Arizona .....	- - -	523
Arkansas .....	- - -	1,099
California .....	\$10,363 73	125,747
Colorado .....	- - -	3,420
Connecticut .....	- - -	10,588
Dakota .....	- - -	10,370
Delaware .....	- - -	3,334
Florida .....	- - -	3,394
Georgia .....	- - -	18,207
Idaho .....	- - -	28
Illinois .....	416 79	81,244
Indiana .....	- - -	24,000
Iowa .....	79 77	25,817
Kansas .....	- - -	6,170
Kentucky .....	- - -	71,347
Louisiana .....	1,566 73	9,710
Maine .....	- - -	19,100
Maryland .....	86 69	19,600
Massachusetts .....	- - -	9,500
Michigan .....	208 47	16,400
Minnesota .....	40 08	10,400
Mississippi .....	- - -	4,500
Missouri .....	- - -	42,300
Montana .....	- - -	2,300
Nebraska .....	- - -	2,200
Nevada .....	- - -	6,500
New Hampshire .....	- - -	159,700
New Jersey .....	28 53	2,600
New Mexico .....	- - -	39,300
New York .....	- - -	3,300
North Carolina .....	- - -	74,400
Ohio .....	49 51	16,800
Oregon .....	136 19	3,400
Pennsylvania .....	1,436 83	18,200
Rhode Island .....	- - -	1,000
South Carolina .....	- - -	13,400
Tennessee .....	- - -	1,000
Texas .....	- - -	7,500
Utah .....	- - -	8,500
Vermont .....	- - -	50
Virginia .....	2,268 05	18,300
Washington .....	- - -	1,000
West Virginia .....	- - -	7,500
Wisconsin .....	- - -	8,500
Wyoming .....	- - -	50
Total .....	16,671 37	\$13,300

## ASSESSMENTS.

The following table shows the assessments made by the Commissioner of Internal Revenue during the fiscal years ended June 30, 1878, and June 30, 1879, respectively, and the increase or decrease on each article or occupation:

Article or occupation.	Amount assessed during fiscal year ended—		Fiscal year ended June 30, 1879.	
	June 30, 1878.	June 30, 1879.	Increase over 1878.	Decrease from 1878.
Tax on deficiencies in production of spirits .....	\$75,583 21	\$63,574 50	.....	\$12,008 71
Tax on excess of materials used in the production of spirits .....	18,050 73	5,050 27	.....	13,000 46
Tax on deposits, capital, and circulation of banks and bankers .....	3,489,694 20	3,152,545 26	.....	337,148 94
Tax on distilled spirits seized or fraudulently removed .....	207,416 14	126,002 14	.....	81,414 00
Tax on fermented liquors removed from brewery unstamped .....	2,008 41	6,144 33	\$3,535 92	.....
Tax on tobacco, snuff, and cigars removed from factory unstamped .....	130,431 60	61,017 45	.....	69,514 15
Tax on proprietary articles removed unstamped .....	4,249 12	2,614 05	.....	1,734 17
Assessed penalties .....	128,405 70	102,285 79	.....	26,119 98
Legacies and successions .....	127,189 94	182,036 71	54,846 77	.....
Unassessed and unassessable penalties, interest, taxes previously abated, conscience money, and deficiencies in bonded accounts which have been collected; also fines, penalties, and forfeitures paid to collectors by order of court or by order of Secretary, and amount of penalties and interest received for validating unstamped instruments (Form 58) .....	370,133 88	401,978 22	31,844 34	.....
Special taxes (licenses) .....	128,718 83	97,068 91	.....	31,647 92
Tax on incomes and dividends .....	123,928 64	34,639 54	.....	89,389 00
<b>Total .....</b>	<b>4,806,508 30</b>	<b>4,235,758 00</b>	.....	<b>570,750 30</b>

The foregoing statement shows a decrease in the assessments for the year ended June 30, 1879, as compared with the previous year, of \$570,750.30. The decrease occurred in taxes on deficiencies in the production of distilled spirits, on excess of materials used in the production of distilled spirits, on distilled spirits seized or fraudulently removed, on tobacco, snuff, and cigars removed unstamped, on proprietary articles removed unstamped, on assessed penalties, on occupations (special taxes), on incomes and dividends, and on deposits, capital, and circulation of banks and bankers.

The decrease in assessments of taxes on deficiencies in the production of distilled spirits and on excess of materials used in the production of spirits indicates a closer observance of the law and regulations in the management of their business by licensed distillers.

These assessments, however, have been materially reduced by the amendment to section 3309 Revised Statutes by the act of March 1, 1879, in reference to unavoidable accidents, and the decision of the Supreme Court of the United States in the case of *Stoll v. Pepper*, fixing the rule by which deficiencies are to be measured.

The decrease in the assessments on spirits, tobacco, snuff, cigars, and proprietary articles removed from the place of manufacture without payment of the tax by stamps indicates a better observance of the law. In respect to illicit distilling, it is proper to state that, owing to the great extent of territory assigned to single officers, and to other circumstances over which this office has had no control, the legal evidence

necessary to identify the distiller and fix the amount of spirits produced has not always been obtainable.

The decrease in the assessments of special taxes and penalties indicates that these taxes are more promptly returned and paid than heretofore.

The decrease in assessments of taxes on incomes and dividends results from the large decrease of taxes of that character remaining uncollected, and to some extent from the unwillingness of taxpayers to waive the statute of limitations.

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I have the honor to be, very respectfully, your obedient servant,

GREEN B. RAUM,

*Commissioner.*

Hon. JOHN SHERMAN,

*Secretary of the Treasury.*

## REPORT OF THE COMPTROLLER OF THE CURRENCY.

TREASURY DEPARTMENT,  
OFFICE OF THE COMPTROLLER OF THE CURRENCY,  
*Washington, November 26, 1879.*

I have the honor to submit for the consideration of Congress, the Seventeenth Annual Report of the Comptroller of the Currency, in compliance with section three hundred and thirty-three of the Revised Statutes of the United States.

The total number of national banks organized, from the establishment of the national-banking system, February 25, 1863, to November 1 of the present year, is 2,438. Of these, 307 have gone into voluntary liquidation by the vote of shareholders owning two-thirds of their respective capitals, and 81 have been placed in the hands of receivers for the purpose of closing up their affairs, leaving 2,050 in operation at the date last named.

Included in the aggregate number organized are ten national gold banks, seven of which, still in operation, are located in the State of California. These banks redeem their circulating-notes in gold coin in the city of San Francisco and at their own counters. They have an aggregate capital of \$4,000,000, and a total circulation of \$1,534,000, but are entitled to receive circulating-notes in amount equal to 80 per cent. of their capital, upon the deposit with the United States Treasurer of the requisite amount of bonds as security therefor. Within the past year one of this class of banks has gone into voluntary liquidation and reorganized as an ordinary national bank, receiving circulating-notes at the rate of 90 per cent. of its capital, and redeeming them at the Treasury Department and at its own counter; and it is probable that the others will also reorganize so soon as the necessary legislative authority shall be obtained to enable them to do so without first going into liquidation.

A bill passed the House of Representatives during a previous session, amending the present law, and authorizing the national gold banks to receive circulating notes in amount equal to 90 per cent. of their capital; and also requiring such banks to keep on deposit, in gold coin, with the Assistant Treasurer of the United States in San Francisco, an amount equal to 5 per cent. of their circulation, instead of keeping 25 per cent. of the same on hand, as is now required by law. The passage

of an act similar in terms, and also of one authorizing the conversion of national gold banks into currency banks, is recommended.

Since my last annual report thirty-eight banks have been organized with an aggregate authorized capital of \$3,595,000, to which \$2,390,440 in circulating-notes have been issued. Thirty-eight banks, with an aggregate capital of \$4,450,000, have voluntarily discontinued business within the same period, and eight banks, having a total capital of \$1,030,000, have failed. The insolvent banks include two, with a capital of \$700,000, which failed after having previously gone into voluntary liquidation.

The following table exhibits the resources and liabilities of the banks on the 2d day of October, 1879, the returns from New York City, from Boston, Philadelphia, and Baltimore, from the other reserve cities, and from the remaining banks of the country being tabulated separately:

	New York City.	Boston, Phila- delphia, and Baltimore.	*Other re- serve cities.	Country banks.	Aggregate.
	47 banks.	99 banks.	82 banks.	1,820 banks.	2,048 banks.
<b>RESOURCES.</b>					
Loans and discounts.....				\$435, 154, 810	\$875, 013, 107
On U. S. bonds on demand.....	\$8, 280, 525	\$2, 017, 226	\$4, 360, 523		
On other stocks, bonds, &c., on demand.....	78, 062, 085	22, 605, 795	11, 445, 079		
On single-name paper with- out other security.....	22, 491, 326	13, 136, 911	7, 150, 239		
All other loans.....	87, 011, 366	118, 267, 128	65, 023, 494		
Overdrafts.....	125, 073	86, 341	349, 810	2, 928, 766	3, 489, 990
Bonds for circulation.....	25, 745, 500	53, 147, 300	25, 650, 800	252, 709, 700	357, 313, 300
Bonds for deposits.....	4, 671, 650	550, 000	3, 404, 500	9, 578, 500	18, 204, 650
U. S. bonds on hand.....	10, 140, 900	9, 066, 250	5, 953, 000	27, 806, 450	52, 966, 600
Other stocks and bonds.....	8, 843, 712	3, 704, 614	2, 634, 916	24, 464, 174	39, 647, 416
Due from reserve agents.....		19, 190, 543	16, 530, 117	71, 302, 887	107, 023, 547
Due from other national banks.....	10, 957, 673	10, 012, 482	6, 284, 310	19, 438, 529	46, 692, 904
Due from other banks and bankers.....	2, 245, 184	992, 478	3, 330, 131	7, 053, 979	13, 630, 772
Real estate, furniture and fix- tures.....	9, 883, 070	7, 005, 672	4, 559, 515	26, 368, 304	47, 817, 170
Current expenses.....	953, 465	732, 041	714, 102	3, 711, 648	6, 111, 256
Premiums.....	827, 072	683, 140	334, 362	2, 486, 937	4, 332, 420
Checks and other cash items.....	1, 969, 600	972, 523	888, 807	7, 475, 143	11, 306, 171
Exchanges for clearing-house.....	93, 487, 352	14, 781, 348	4, 606, 265		112, 964, 965
Bills of other national banks.....	1, 467, 887	2, 524, 131	1, 845, 771	10, 809, 781	16, 707, 550
Fractional currency.....	55, 672	35, 023	53, 065	251, 405	396, 065
Specie.....	10, 349, 868	6, 979, 727	4, 360, 176	11, 474, 901	42, 173, 732
Legal-tender notes.....	19, 738, 584	8, 293, 515	11, 526, 789	20, 637, 808	69, 196, 676
U. S. certificates of deposit.....	12, 900, 000	9, 560, 000	3, 575, 000	735, 000	26, 770, 000
Five per cent. redemption fund.....	1, 131, 721	2, 371, 148	1, 095, 277	11, 184, 569	15, 782, 715
Due from U. S. Treasurer.....	492, 650	81, 501	88, 256	583, 963	1, 246, 370
<b>Totals.....</b>	<b>420, 840, 104</b>	<b>306, 796, 846</b>	<b>185, 873, 204</b>	<b>955, 277, 294</b>	<b>1, 868, 787, 448</b>
<b>LIABILITIES.</b>					
Capital stock.....	50, 750, 000	77, 556, 200	37, 795, 500	287, 965, 605	454, 067, 365
Surplus fund.....	16, 006, 435	19, 893, 063	10, 461, 775	68, 449, 256	114, 786, 529
Undivided profits.....	9, 090, 919	4, 685, 356	3, 715, 637	24, 403, 030	41, 300, 943
National-bank notes outstand- ing.....	22, 328, 624	46, 283, 414	22, 017, 051	223, 157, 273	313, 786, 362
State bank notes outstanding.....	53, 251	67, 044		196, 566	316, 861
Dividends unpaid.....	202, 727	778, 241	153, 546	1, 532, 910	2, 667, 430
Individual deposits.....	213, 354, 222	117, 446, 336	72, 709, 000	316, 228, 005	719, 737, 569
U. S. deposits.....	3, 877, 135	340, 613	1, 790, 869	5, 004, 246	11, 018, 863
Deposits of U. S. disbursing officers.....	157, 193	6, 746	949, 796	2, 355, 865	3, 469, 600
Due to national banks.....	81, 015, 319	32, 048, 687	21, 240, 841	13, 995, 410	149, 200, 257
Due to other banks and bankers.....	23, 098, 279	6, 801, 020	13, 734, 193	8, 298, 961	52, 022, 453
Notes and bills re-discounted.....		182, 766	266, 680	1, 755, 569	2, 205, 015
Bills payable.....		1, 241, 309	1, 032, 310	1, 034, 592	4, 208, 202
<b>Totals.....</b>	<b>420, 840, 104</b>	<b>306, 796, 846</b>	<b>185, 873, 204</b>	<b>955, 277, 294</b>	<b>1, 868, 877, 448</b>

\* The reserve cities, in addition to New York, Boston, Philadelphia, and Baltimore, are Albany, Pittsburgh, Washington, New Orleans, Louisville, Cincinnati, Cleveland, Chicago, Detroit, Milwaukee, Saint Louis, and San Francisco.

The following table exhibits the resources and liabilities of the national banks during the last nine years, at nearly corresponding dates for each year:

	Oct. 2, 1871.	Oct. 3, 1872.	Sept. 12, 1873.	Oct. 2, 1874.	Oct. 1, 1875.	Oct. 2, 1876.	Oct. 1, 1877.	Oct. 1, 1878.	Oct. 2, 1879.
	1,767 banks.	1,919 banks.	1,976 banks.	2,004 banks.	2,087 banks.	2,089 banks.	2,080 banks.	2,053 banks.	2,048 banks.
<b>RESOURCES.</b>									
<i>Loans</i> .....	<i>Millions.</i> 831.6	<i>Millions.</i> 877.2	<i>Millions.</i> 944.2	<i>Millions.</i> 954.4	<i>Millions.</i> 984.7	<i>Millions.</i> 931.3	<i>Millions.</i> 891.9	<i>Millions.</i> 834.0	<i>Millions.</i> 878.5
<i>Bonds for circulation</i> .....	364.5	382.0	368.3	383.3	370.3	337.2	336.8	347.6	357.8
<i>Other U. S. bonds</i> .....	43.8	27.0	23.0	28.0	28.1	47.8	45.0	94.7	71.2
<i>Other stocks, bonds, &amp;c</i> .....	24.5	23.5	23.7	27.8	33.5	34.4	34.5	86.9	89.7
<i>Due from other banks</i> .....	143.2	128.2	143.5	134.8	144.7	146.9	129.9	138.9	107.3
<i>Real estate</i> .....	30.1	32.3	34.7	38.1	42.4	43.1	45.2	46.7	47.8
<i>Specie</i> .....	13.2	10.2	10.9	21.2	8.1	21.4	22.7	30.7	42.2
<i>Legal-tender notes</i> .....	107.0	102.1	92.4	80.0	76.5	84.2	66.9	64.4	69.2
<i>National bank notes</i> .....	14.3	15.8	16.1	18.5	18.5	15.9	15.6	16.9	16.7
<i>Clearing-house exchanges</i> .....	115.2	125.0	100.3	109.7	87.9	100.0	74.5	82.4	113.0
<i>U. S. certificates of deposit</i> .....		0.7	20.6	42.8	48.8	29.2	33.4	32.7	26.8
<i>Due from U. S. Treasurer</i> .....				20.3	19.6	16.7	16.0	16.5	17.0
<i>Other resources</i> .....	41.2	25.2	17.3	18.3	19.1	19.1	28.7	24.9	22.1
<b>Totals</b> .....	<b>1,730.6</b>	<b>1,755.8</b>	<b>1,830.6</b>	<b>1,877.2</b>	<b>1,882.2</b>	<b>1,827.2</b>	<b>1,741.1</b>	<b>1,767.3</b>	<b>1,868.8</b>
<b>LIABILITIES.</b>									
<i>Capital stock</i> .....	458.3	479.0	491.0	493.8	504.8	499.8	479.5	466.2	454.1
<i>Surplus fund</i> .....	101.1	110.3	120.3	129.0	134.4	132.2	122.8	116.9	114.8
<i>Undivided profits</i> .....	42.0	46.0	54.5	51.5	63.0	46.4	44.5	40.9	41.3
<i>Circulation</i> .....	317.4	335.1	340.3	334.2	319.1	292.2	291.9	301.9	313.8
<i>Due to depositors</i> .....	631.4	628.9	640.0	683.8	678.4	666.2	630.4	668.4	736.9
<i>Due to other banks</i> .....	171.9	143.8	173.0	175.8	170.7	179.8	161.6	165.1	201.2
<i>Other liabilities</i> .....	8.5	11.5	11.5	9.1	11.8	10.6	10.4	7.9	6.7
<b>Totals</b> .....	<b>1,730.6</b>	<b>1,755.8</b>	<b>1,830.6</b>	<b>1,877.2</b>	<b>1,882.2</b>	<b>1,827.2</b>	<b>1,741.1</b>	<b>1,767.3</b>	<b>1,868.8</b>

Section 333 of the Revised Statutes of the United States requires the Comptroller to present annually to Congress a statement of the condition of the banks and savings-banks organized under State laws. Returns of capital and deposits are made by these institutions and by private bankers, semi-annually, to the Commissioner of Internal Revenue for purposes of taxation. From these returns the following table has been compiled in this Office, exhibiting, in concise form, by geographical divisions, the total average capital and deposits of all the State and savings banks and private bankers of the country, for the six months ending May 31, 1879:

Geographical divisions.	State banks and trust companies.			Private bankers.			Savings-banks with capital.			Savings-banks without capital.	
	No.	Capital.	Deposits.	No.	Capital.	Deposits.	No.	Capital.	Deposits.	No.	Deposits.
		<i>Millions.</i>	<i>Millions.</i>		<i>Millions.</i>	<i>Millions.</i>		<i>Millions.</i>	<i>Millions.</i>		<i>Millions.</i>
New England States.....	40	7.10	14.39	70	3.72	3.32				420	366.46
Middle States.....	239	40.72	124.64	853	34.54	54.53	6	0.51	2.44	182	350.95
Southern States.....	251	27.43	32.60	237	5.64	11.89	3	0.86	0.83	3	1.69
Western States and Territories.....	475	52.02	85.44	1,474	25.85	70.18	20	2.85	32.80	33	27.90
United States.....	1,005	127.27	257.07	2,634	69.75	139.92	29	4.22	36.07	644	747.06

The capital of the 2,048 national banks in operation on June 14, 1879, as will be seen by a subsequent table, was \$455,244,415—not including surplus, which amounted at that date to more than \$114,000,000—while

the average capital of all the State banks, private bankers, and savings-banks, for the six months ending May 31 previous, was but \$201,241,484, which amount is considerably less than one-half that of the national banks. The net deposits of the national banks were \$713,403,639, and the average deposits of all other banks, including savings-banks, were \$1,180,122,835. The average deposits for the same period of the 644 savings-banks having no capital stock, which are included in the above aggregate, were \$747,062,057.

The table below exhibits the aggregate average capital and deposits for the six months ending May 31, 1879, of all classes of banks other than national, and the capital and deposits of the national banks on June 14, following:

Geographical divisions.	State banks, savings-banks, private bankers, &c.			National banks.			Total.		
	No.	Capital.	Deposits.	No.	Capital.	Deposits.	No.	Capital.	Deposits.
		<i>Millions.</i>	<i>Millions.</i>		<i>Millions.</i>	<i>Millions.</i>		<i>Millions.</i>	<i>Millions.</i>
New England States .....	536	10.83	384.17	544	184.43	128.73	1,080	175.26	510.88
Middle States .....	1,380	75.77	532.56	640	170.21	893.12	1,920	245.98	925.68
Southern States .....	494	33.92	47.02	176	30.40	37.93	670	64.32	84.95
Western States and Territories .....	2,002	80.72	210.37	688	90.20	155.63	2,690	170.92	372.00
United States .....	4,312	201.24	1,180.12	2,048	455.24	713.40	6,360	656.48	1,893.52

From this table it will be seen that the total number of banks and bankers in the country at the dates named was 6,360, with a total banking capital of \$656,485,899, and total deposits of \$1,893,526,474. In the appendix will be found tables showing by geographical divisions the number, average capital, and deposits, of State and savings-banks and private bankers, for various periods from 1875 to 1878, and there will also be found other tables giving the assets and liabilities of State institutions during the past year, so far as they could be obtained from the official reports of the several State officers.

A table arranged by States and principal cities, giving the number capital and deposits, and the tax thereon, of all banking institutions other than national, for the six months ending May 31, 1879, will be found on a subsequent page. Similar tables for previous years will be found in the appendix.

The following table exhibits, for corresponding dates in each of the last four years, the aggregate amounts of the capital and deposits of each of the classes of banks given in the foregoing tables:

Years	National banks.			State banks, private bankers, &c.			Savings-banks with capital.			Savings-banks without capital.			Total.		
	No.	Capital.	Deposits.	No.	Capital.	Deposits.	No.	Capital.	Deposits.	No.	Deposits.		No.	Capital.	Deposits.
		<i>Millions.</i>	<i>Millions.</i>		<i>Millions.</i>	<i>Millions.</i>		<i>Millions.</i>	<i>Millions.</i>		<i>Millions.</i>			<i>Millions.</i>	<i>Millions.</i>
1876	2,091	500.4	713.5	3,803	214.0	480.0	26	5.0	37.2	691	844.6	6,611	719.4	2,675.5	
1877	2,078	481.0	708.2	3,799	218.0	470.5	26	4.9	38.2	676	847.2	6,579	704.5	2,120.0	
1878	2,056	470.4	677.2	3,769	202.2	418.3	23	3.2	23.2	638	803.3	6,456	675.8	1,920.0	
1879	2,048	455.3	713.4	3,639	197.0	397.0	20	4.2	33.1	644	747.1	6,360	656.5	1,893.5	

The aggregate capital of the various classes of banks shown by the foregoing table has diminished from \$719,400,000 in 1876 to \$656,500,000 in 1879, and the aggregate deposits have fallen off from \$2,075,300,000 in 1876, to \$1,893,500,000 in 1879—a reduction of \$62,900,000 in capital and \$181,800,000 in deposits during the last four years. The national banking capital has diminished \$45,100,000, but the deposits of the national banks are almost precisely the same that they were in 1876. Savings-banks with capital show a reduction of about one million in capital and the same amount in deposits. The capital and deposits of State banks and private bankers are less by seventeen millions and eighty-three millions, respectively. The greatest reduction, however, is in the deposits of savings-banks without capital, which have diminished \$97,500,000.

#### THE NATIONAL BANKS AND THE REFUNDING OF THE PUBLIC DEBT.

The great war debt of the United States was contracted in less than four and a half years. In 1835 the country was entirely out of debt, and on January 1, 1861, the whole debt of the Union amounted to but \$66,243,721. During the next six months it increased at the rate of about four millions a month, being, on the first day of July, 1861, \$90,580,873. During the next year it increased at the rate of more than thirty-six millions per month, and at the close of the fiscal year ending June 30, 1862, it had reached \$524,176,412. At the end of the succeeding year it was considerably more than twice that amount, being on July 1, 1863, \$1,119,772,138. During the following year it increased nearly seven hundred millions, reaching on July 1, 1864, the sum of \$1,815,784,370. During the next nine months, to the close of the war, April 1, 1865, the debt increased at the rate of about two millions a day, or sixty millions a month, and for the five months next thereafter, at the rate of about three millions a day, or ninety millions a month, reaching its maximum on August 31, 1865\*, at which date it amounted to \$2,845,907,626,† and was composed of the following items:

Funded debt† .....	\$1,109,568,191 80
Matured debt.....	1,503,020 09
Temporary loans.....	107,148,713 16
Certificates of indebtedness.....	85,093,000 00
Five per cent. legal-tender notes.....	33,954,230 00
Compound interest legal-tender notes.....	217,024,160 00
Seven-thirty notes .....	830,000,000 00
United States notes (legal tenders).....	433,160,569 00
Fractional currency .....	28,344,742 51
Suspended requisitions uncalled for .....	2,111,000 00
Total .....	2,845,907,626 56

This table shows an aggregate of more than one thousand two hundred and seventy-five millions of temporary obligations of the govern-

\* Report of Secretary McCulloch, 1867, p. iv; 1868, p. xli.

† Less cash in the Treasury, \$83,218,055.

‡ This item includes \$1,255,000 of bonds issued to Pacific railroads.

ment, of which eight hundred and thirty millions bore interest at 7.30 per cent. annually.\*

This immense amount of temporary obligations was funded within the three years which followed the close of the war; and the skill and good judgment displayed in so doing can only be fully appreciated by those who are familiar with the difficulties and delicate conditions under which the work was accomplished.

The temporary loans, certificates of indebtedness, seven-thirty notes, and all the other items of the debt—except the legal-tender notes and fractional currency, which have been largely reduced—have either been paid, have matured and ceased to bear interest, or have been funded into five-twenty six per cents, of which more than one thousand six hundred millions (\$1,602,698,950) were issued.

The acts of July 14, 1870, and January 20, 1871, authorized the issue of bonds for the purpose of refunding the five-twenty six per cents. The former act authorized the issue of fifteen hundred millions in bonds, two hundred millions of which were to be five per cents payable ten years after date, at the pleasure of the United States, three hundred millions of four and a half per cents payable in fifteen years, and one thousand millions payable in thirty years from the date of their issue, and bearing interest at the rate of four per cent. per annum. The act provided that these bonds should not be sold for less than their par value in coin, and that the proceeds should be applied to the redemption of the five-twenty bonds. The latter act increased the amount of the five per cent. bonds to five hundred millions, but provided that the whole amount of bonds issued should not exceed the amount originally authorized; and the subsequent act of January 25, 1879, authorized the refunding or exchanging of any other of the five or six per cent. bonds which were redeemable at the pleasure of the government.

The whole amount of the funded debt on the first of January, 1871, was \$1,935,342,700, of which \$1,437,097,300 consisted of five-twenty six per cent. bonds, and \$194,567,300 of ten-forty five per cent. bonds. On the first day of August, 1871, nearly sixty-six millions (\$65,775,550) of new five per cent. bonds had been subscribed for, chiefly by the national banks. During the same month an agreement was entered into by the Secretary with Jay Cooke & Co.† for the sale of the remaining two hundred millions of said bonds, and in the month of January, 1873, similar arrangements were made for the sale of a large additional amount.‡ The remainder of the five hundred millions (\$178,548,300) was sold during the next three years, the Secretary of the Treasury stating in his report of December 6, 1875,§ that he had “the pleasure of announcing to Congress that the funding of five hundred millions six per cent. bonds into those bearing five per cent. interest has been accomplished.”

On August 24, 1876, a new contract was made by the Secretary with A. Belmont & Co. and associates,|| for the sale of the three hundred millions of four and a half per cent. bonds authorized. In this contract the Secretary reserved the right to terminate it by giving ten days' notice to the contractors, and under the contract calls were made prior to March 4, 1877, for the redemption of one hundred millions of six per cents. In May, 1877, the present Secretary, availing himself of the privilege secured in the contract, gave notice that he would limit the sale of four

\* At that date one thousand seven hundred and twenty-five millions of the public debt bore an average interest of 6.62 per cent. Finance Report, 1865, p. 23.

† Secretary Boutwell's report, 1871, p. xvii.

§ Secretary Bristow's report, 1875, p. xii.

‡ Secretary Richardson's report, 1873, p. ix.

|| Secretary Morrill's report, 1876, p. xi.



and a half per cents to two hundred millions; and additional subscriptions were rapidly made until that amount was taken. The avails of one hundred and eighty-five millions of these bonds were applied to the redemption of five-twenties, the remaining fifteen millions being held for resumption purposes. On the 9th of June, 1877, a contract was made with a syndicate for the sale, at par, in coin, of the four per cent. bonds authorized to be issued by the refunding act, with the right to terminate the contract at any time after December 31, 1877, by giving ten days' notice to the contracting parties.\* In 1877 seventy-five millions of the four per cents were sold, and in 1878 more than one hundred and twenty-eight millions (\$128,685,450). During the first four months of 1879 \$497,247,750 additional fours were disposed of, of which more than one hundred and forty-nine millions were sold at a premium of one-half of one per cent. Of this amount, one hundred and twenty-one millions were taken by the First National Bank of New York and associates, and the remainder by other national banks. These, with the sales of forty millions of refunding certificates, completed the refunding of all the bonds of the United States which were redeemable.

The sales of United States bonds since 1871, under the refunding acts, have been five hundred millions of fives, one hundred and eighty-five millions of four-and-a-halves, and \$710,345,950 of four per cents; in all, more than one thousand three hundred and ninety-five millions of dollars. There have also been sold for resumption purposes, since March 1, 1877, under the authority of the resumption act of January 14, 1875, twenty-five millions of fours, and sixty-five millions of four and a half per cents; fifty millions of the latter being at a premium of one and a half per cent.

The reduction on the interest-bearing debt of the United States, from its highest point, on August 31, 1865, to November 1, 1879, is \$583,886,594, of which amount \$105,160,900 has been effected since the refunding operations were commenced on May 1, 1871.

At its highest point the annual interest on the debt was \$150,977,697, while it is now \$83,773,778 only. There has, therefore, been a total reduction in this charge of \$67,203,919 annually.

The total annual reduction of interest under these refunding operations, accomplished since March 1, 1877, is \$14,290,416, while the saving on this account growing out of the operations of the present year alone, is nearly nine millions (\$8,803,707), and the total annual saving in all the refunding operations of the government since 1871 is nearly twenty millions (\$19,900,846). These funding transactions are believed to be without parallel in financial history.

The public debt of England in January, 1793, amounted to \$1,191,145,000. At that date began the great expenditures caused by the wars of the French revolution and of Napoleon, extending from 1793 to 1816. Between these dates stock and annuities to the amount of \$3,881,000,000 were placed on the market at rates of interest varying from 3 to 5 per cent. The average rate of discount at which the stock was sold was 33 per cent., and the average rate of interest paid on the money actually raised by the sale was 5.15 per cent.

After a long interval of peace, the Irish famine in 1847, and the Crimean war and Indian mutiny, from 1854 to 1856, caused other additions to the public debt. In the years 1847, 1855, and 1856, three per cent. interest-bearing stock, to the amount of one hundred and seventy

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\* Secretary Sherman's report for 1877, p. viii.

millions of dollars, was issued, and sold at a discount of 10.94 per cent., while the average rate of interest paid on the money raised by the sale was 3.4 per cent.\*

The three great Fench loans in 1870, 1871 and 1872, of nearly fifteen hundred and ninety-two millions of dollars, realized twelve hundred and seventy-three millions of dollars only. The first loan was at the rate of 3 per cent., and realized to investors nearly 5 per cent., while the two

\* The figures given in the following table, relative to the loans of 1793-1817, inclusive, are based upon information derived from a somewhat similar table originally published in McCulloch's "Treatise on Taxes and the Funding System," London, 1852, and republished in the appendix to an essay of William Newmarch, on the "Loans raised by Mr. Pitt," which essay appeared in the London Statistical Journal for September, 1855. The figures relating to the loans of 1847-1856 are derived from Sir Stafford Northcote's "Twenty Years of Financial Policy," pp. 94, 265, 278, 288.

Year.	Stock issued (£ = \$5).	Money raised on stock issued (£ = \$5).	Annual in- terest on stock (£ = \$5).	Average discount on sale of stock.	Average interest realized by invest- ors.	Kind of stocks.
1793.....	\$31,250,000	\$22,500,000	\$850,000	28	4.22	3 per cent. consols.
1794.....	78,350,000	64,550,000	3,000,000	17.6	4.65	3 per cent. consols: 4 per cent. with long annuity.
1795.....	277,700,000	210,450,000	10,650,000	24.2	5.06	Do.
1796.....	284,700,000	213,800,000	11,350,000	24.9	5.31	3 per cent. consols; 5 per cent. with long annuity.
1797.....	145,100,000	73,100,000	4,650,000	49.6	6.36	3 per cent. consols: 4 per cent. with long annuity.
1798.....	173,100,000	90,000,000	5,500,000	49.5	6.11	3 per cent. consols; long annuity.
1799.....	109,350,000	62,500,000	3,250,000	42.8	5.20	3 per cent. consols.
1800.....	145,200,000	92,500,000	4,350,000	36.3	4.70	Do.
1801.....	279,750,000	172,050,000	8,850,000	38.5	5.14	Do.
1802.....	151,750,000	115,000,000	4,550,000	24.2	3.96	3 per cent. consols, with long annuity.
1803.....	80,000,000	50,000,000	2,550,000	37.5	5.10	Do.
1804.....	90,100,000	50,000,000	2,700,000	44.5	5.40	3 per cent. consols.
1805.....	197,700,000	107,000,000	5,700,000	45.6	5.30	Do.
1806.....	149,400,000	90,000,000	4,450,000	39.8	4.94	Do.
1807.....	91,850,000	61,000,000	2,900,000	33.6	4.75	Do.
1808.....	68,450,000	60,000,000	2,950,000	12.3	4.92	Do.
1809.....	110,850,000	97,650,000	4,750,000	11.9	4.86	Do.
1810.....	99,050,000	81,550,000	3,800,000	17.7	4.68	4 per cents.
1811.....	146,200,000	120,000,000	5,950,000	17.9	4.96	3 per cent. consols, with long annuity.
1812.....	203,700,000	139,350,000	7,400,000	31.6	5.31	3 per cent. consols; 5 per cents.
1813.....	468,650,000	293,800,000	16,150,000	37.3	5.50	3 per cent. consols, with long annuity.
1814.....	123,450,000	92,500,000	4,250,000	25.1	4.59	Do.
1815.....	354,450,000	225,650,000	12,900,000	36.3	5.72	3 per cent. consols; 4 per cents.
1816.....	15,000,000	15,000,000	450,000	0	3	Do.
Totals.....	3,581,000,000	2,600,550,000	134,000,000	33	5.15	
Feb'y, 1847.....	40,000,000	35,800,000	1,200,000	10.5	3.35	
April, 1855.....	80,000,000	70,100,000	2,400,000	12.4	3.42	3 per cents.
Feb'y, 1856.....	25,000,000	22,500,000	750,000	10	3.33	Do.
May, 1856.....	25,000,000	23,177,500	750,000	7.3	3.24	Do.
Totals.....	4,651,000,000	2,732,127,500	139,100,000	22.1	5.05	Do.

In 1793 the total funded and floating debt of Great Britain was \$1,239,372,170, the interest on which, at the several rates of 3, 3½, 4, and 5 per cent., amounted annually to \$48,556,190. In 1817 the total debt, including exchequer bills, had reached the sum of \$4,196,910,725, carrying an annual interest of \$157,959,635. In 1857 the amount of the funded debt, exchequer bills and exchequer bonds, was \$4,040,543,610, the annual interest upon which was \$142,750,195. The total debt had diminished in 1875 to \$3,576,741,920, with an annual charge for interest and cost of management of \$135,472,400; while in 1878 there appeared a slight increase, the amount of the debt being then \$3,888,907,980, with interest and cost of management equaling \$142,063,756.

subsequent and larger loans were sold at 82.5 and 84.5 per cent., which was about equivalent to 6 per cent. bonds at par.\*

The following table exhibits the classification of the unmatured, interest-bearing bonded debt of the United States on August 31, 1865, when it reached its maximum, and on the first day of July annually

It appears from official documents that the national debt of Great Britain, with its interest and cost of management, stood, at the dates named below, as follows:

Year.	Principal.	Interest and cost of management.	Authorities.
1775	£126,842,811	£4,708,519	House of Commons document, 1838.
1783	221,843,631	9,065,585	Do.
1796	247,874,434	9,711,238	Do.
1818	840,582,064	31,485,753	Do.
1857	808,108,722	28,550,639	Do.
1861	805,664,387	26,142,006	Statistical abstract, 1861.
1875	775,348,386	27,094,480	Statistical abstract, 1875.
1878	777,781,596	28,412,750	Whitaker's Almanack, 1878.

Many of the loans which the debt comprised were what are known as perpetual loans and annuities, some of which, as well as previous loans, which then bore interest at the rates of 5 and 4 per cent., were, during the twenty-three years from 1822 to 1844, inclusive, refunded from time to time into stocks bearing interest at the rate of 4, 3½, 3¼, and 3 per cent. During this period the principal of the debt was reduced \$6,251,900 only, but the annual saving to the government through refunding at lower rates of interest was \$15,259,000.

The refunding operations were continued subsequent to 1844, until in 1854 there remained no stocks bearing a greater interest than 3 per cent., except the new 3¼ per cents, which were in 1855 also reduced to threes. In this process nothing was added to the principal of the debt. This information is obtained from the standard authorities above referred to.

It is here worthy of remark that the consols, standing in 1853 at £500,000,000, constituted at that time 65 per cent. of the entire national debt. This 3 per cent. stock cannot under the conditions of its issue be redeemed by the government without giving to its holders a full year's notice of payment. It is well understood, however, that the government cannot with prudence or safety venture upon the bold policy to which the giving of such a notice would commit it, thereby assuming all the risks incident to a change of circumstances in the interval between notice and time of payment. See Sir Stafford Northcote's "Twenty Years of Financial Policy," p. 222.

The reserved option of redemption in the terms of the great war-loans of the United States is of much greater value to our government than is the virtual perpetuity of the British consols to the government of Great Britain; for through this option the Treasury has been enabled to refund the outstanding bonds of the United States at the present low current rate of interest, and this on notice so brief that no risk whatever was incurred thereby, while the British exchequer is in effect prevented from availing itself of any decline in the rates of interest, but must continue to pay 3 per cent. upon its enormous amount of debt, though it might otherwise refund or borrow money for its redemption, at a greatly reduced rate.

The resulting savings arising out of that provision in our loans which authorizes the anticipation of the time of their redemption may eventually wholly offset the excess in the rate of interest paid upon them over that paid on the British consols, which excess is now, as to the greater part of our loans, but 1 per cent. annually.

\*The following table in reference to the French loans of 1870-71-72 has been compiled from data given in the May, 1877, number of the *Bulletin De Statistique et De Legislation Comparée*:

Date of loans.	Rate of interest.	Amount of loans (1 fr.=19.3 cts.)	Amount received for each 100 dollars of loan.	Total amount received from loans. (1 fr.=19.3 cts.)	Rate of interest realized to investors.
August 12, 1870.....	3	\$250,241,635	\$60.60	\$155,282,431	Per cent.
June 20, 1871.....	5	538,444,639	82.50	442,566,827	4.95
July 15, 1872.....	5	790,121,557	84.50	675,257,715	6.00
Total.....		1,591,807,831		1,273,106,973	5.92

thereafter, together with the amount outstanding on November 1 of the present year:

Date.	6 per cent. bonds.	5 per cent. bonds.	4½ per cent. bonds.	4 per cent. bonds.	Total.
Aug. 31, 1865.....	\$908,518,091	\$199,792,100			\$1,108,310,191
July 1, 1866.....	1,008,388,469	198,528,435			1,206,916,904
July 1, 1867.....	1,421,110,719	198,533,435			1,619,644,154
July 1, 1868.....	1,841,521,800	221,588,400			2,063,110,200
July 1, 1869.....	1,880,341,300	221,589,300			2,107,930,600
July 1, 1870.....	1,764,932,300	221,589,300			1,986,521,600
July 1, 1871.....	1,618,897,300	274,236,450			1,893,133,750
July 1, 1872.....	1,374,883,800	414,567,300			1,789,451,100
July 1, 1873.....	1,281,238,650	414,567,300			1,695,805,950
July 1, 1874.....	1,213,624,700	510,628,050			1,724,252,750
July 1, 1875.....	1,100,865,550	607,132,750			1,707,998,300
July 1, 1876.....	984,999,650	711,685,800			1,696,685,450
July 1, 1877.....	854,621,850	703,266,650	\$140,000,000		1,697,888,500
July 1, 1878.....	738,619,000	703,266,650	240,000,000	\$98,850,000	1,780,735,650
July 1, 1879.....	310,932,500	646,905,500	250,000,000	679,878,110	1,887,716,110
Nov. 1, 1879.....	283,661,350	508,440,350	250,000,000	740,845,950	1,782,947,650

The refunding of the national debt commenced in 1871, at which time the national banks held nearly four hundred millions of the five and six per cent. bonds; and from that date to the present time they have held more than one-fifth of the interest-bearing debt of the United States. A large portion of the bonds held by them in 1871 bore interest at the rate of 6 per cent. This class of bonds has since been greatly reduced, and is now less than one-sixth of all the bonds pledged for circulation, while more than one-third of the amount consists of bonds bearing interest at 4 per cent. This will be seen from the following table, which exhibits the amounts and classes of bonds owned by the banks, including those pledged as security for circulation and for public deposits, on the first day of July of each year since 1865, and upon November 1 of the present year:

Date.	U. S. bonds held as security for circulation.					U. S. bonds held for other purposes at nearest date.	Grand total.
	6 per cent. bonds.	5 per cent. bonds.	4½ per cent. bonds.	4 per cent. bonds.	Total.		
July 1, 1865.....	\$170,382,500	\$65,576,600			\$235,959,100	\$155,785,750	\$391,744,850
July 1, 1866.....	241,083,500	86,226,850			327,310,350	121,152,950	448,463,300
July 1, 1867.....	251,430,400	89,177,100			340,607,500	84,002,650	424,610,150
July 1, 1868.....	250,726,950	90,768,950			341,495,900	80,922,500	422,418,400
July 1, 1869.....	255,190,350	87,661,250			342,851,600	55,102,000	397,953,600
July 1, 1870.....	247,355,350	84,923,200			342,278,550	43,960,600	386,239,150
July 1, 1871.....	220,497,750	139,387,800			359,885,550	39,450,800	399,336,350
July 1, 1872.....	173,251,450	207,189,250			380,440,700	31,888,200	412,328,900
July 1, 1873.....	160,923,600	229,487,050			390,410,650	25,724,400	416,134,950
July 1, 1874.....	154,370,700	236,800,500			391,171,200	25,347,100	416,518,300
July 1, 1875.....	136,955,100	239,359,400			376,314,500	26,900,200	403,214,700
July 1, 1876.....	109,313,450	232,081,300			341,394,750	45,170,800	386,565,050
July 1, 1877.....	87,690,300	206,651,050	\$44,372,250		338,713,600	47,315,050	386,028,650
July 1, 1878.....	82,421,200	199,514,550	48,448,650	\$19,162,000	349,546,400	68,850,900	418,397,300
July 1, 1879.....	56,042,800	144,616,300	35,056,550	118,538,950	354,254,600	76,003,520	430,858,120
Nov. 1, 1879.....	59,315,450	131,301,600	34,866,950	138,318,400	303,802,400	71,181,250	484,983,650

It is certain that if the national banking system had not existed, and United States notes had alone been issued, the refunding operations here described and the consequent large reduction of interest upon the public debt would not have been possible.

The Secretary of the Treasury, in his report for 1862, said that among the advantages which would arise from the establishment of a national banking system would be the fact that the bonds of the government would be required for banking purposes; a steady market would be

established, and their negotiation greatly facilitated; a uniformity of price for the bonds would be maintained at a rate above that of funds of equal credit, but not available as security for circulation. "It is not easy to appreciate the full benefits of such conditions to a government obliged to borrow;" it will "reconcile, as far as practicable, the interests of existing institutions with those of the whole people;" and will supply "a firm anchorage to the union of the States."

There is no doubt that these expectations have been more than realized, and that the credit of the United States and its ability to borrow money at low rates of interest have been greatly enhanced by placing its bonds in large amounts in the possession of the leading monetary institutions of nearly every city and village in the Union.

The wisdom of Secretary Chase, and of others who, in 1862, advocated the establishment of a national banking system, was long since recognized by those who understood the principles which should govern a sound system of currency and banking; but, in the light of the extraordinary financial operations of the government during the present year, the wisdom and the economy of the system, both for the government and the people, are now more apparent than ever.

The government has still outstanding \$273,631,350 in six per cents, and \$508,440,350 in five per cents, all of which will mature in 1881. The refunding of these bonds into four per cents will save \$10,558,030 in interest annually. The credit of the government is now such that it is not improbable that long before the maturity of the fours the present debt may be refunded into three and a half per cent. bonds, which is one-half of one per cent. more than the rate of the English consols, thereby saving a large additional amount of interest.

#### RESUMPTION OF COIN PAYMENTS.

The act of January 14, 1875, required the Secretary of the Treasury, on and after January 1, 1879, to redeem "in coin the United States legal-tender notes then outstanding, on their presentation for redemption at the office of the assistant treasurer of the United States in the city of New York, in sums of not less than fifty dollars." At the time of the passage of this act the leading industries and general business of the country were greatly depressed. The agricultural classes were largely in debt, and the failures of mercantile establishments and manufacturing corporations in the three years previous represented more than \$500,000,000. During the succeeding years an era of economy supervened, agricultural products greatly increased,\* and the balance of trade was turned largely in our favor—the excess of exports over imports for the fiscal year 1876 being more than seventy-nine millions, in 1877 more than one hundred and fifty one millions, in 1878 exceeding two hundred and fifty-seven millions, and for the year ending September 30 last more than two hundred and ninety-four millions. For 1878 the excess was, it will be seen, more than three times as great as that of 1876, and more than two-thirds greater than that of 1877.†

\* The Department of Agriculture estimates the product of corn in 1878 at 1,338 millions bushels; wheat, 420 millions; oats, 414 millions; barley, 42 millions; rye, 26 millions; cotton, 2,347 millions pounds; tobacco, 393 millions pounds. The estimates for 1879 are: Corn, 1,601 millions bushels; wheat, 449 millions; oats, 364 millions; barley, 40 millions; rye, 24 millions; cotton, 2,217 millions pounds; tobacco, 384 millions pounds.

† Excess of exports in fiscal year 1876, \$79,643,481; in 1877, \$151,152,004; in 1878, \$257,814,234; during the calendar year 1878, \$305,279,590; and during the fiscal year 1879, \$264,661,666.

The resumption act not only fixed the day of resumption, but authorized the Secretary, in order to prepare and provide therefor, to use any surplus revenues not otherwise appropriated, and to issue, sell, and dispose of, at not less than par in coin, any of the bonds of the United States described in the act of July 14, 1870. Under this act, the Secretary in 1877 sold at par in coin fifteen millions of four-and-a-half and twenty-five millions of fours; and in April, 1878, he sold fifty millions of four and a half percents at a premium of one and a half per cent. The coin in the Treasury continually increased, so that on the day of resumption the Secretary held one hundred and thirty-five millions (\$135,382,639) of gold coin and bullion, and, in addition, over thirty-two millions (\$32,476,095) in silver coin and bullion, the gold coin alone being nearly equal to forty per cent. of the United States notes then outstanding.

The banks in the cities of New York and Boston strengthened the hands of the government by their action in October, 1878, an account of which will be found in my report for that year. The assistant treasurer of the United States at New York became a member of the clearing-house, thus facilitating the business of the banks with the government, and the banks agreed to receive United States notes, not only for their ordinary balances, but in payment of the interest upon the public debt and of other coin obligations of the government. The banks of the country at the date of resumption held more than one-third of the outstanding Treasury notes; but they had so much confidence in the ability of the Secretary to maintain resumption that none were presented by them for redemption. The people also, who held more than three hundred millions of the issues of the national banks, which issues were based upon the bonds of the nation, preferred such notes to coin itself. There was, therefore, no demand for payment of the notes of the government, and the gold coin in the Treasury, which amounted to one hundred and thirty-five millions on the day of resumption, increased more than thirty-six millions in the next ten months, the amount held on the first day of November, 1879, exceeding one hundred and seventy-one millions.

The Comptroller has for a series of years presented in his reports the following table, showing the amount of Treasury notes and of national-bank notes outstanding at the dates named therein, with the currency price of gold and the gold price of currency at the same dates:

Date.	United States issues.			Notes of national banks including gold notes.	Aggregate.	Currency price of \$100 gold.	Gold price of \$100 currency
	Legal-tender notes.	Old demand notes.	Fractional currency.				
August 31, 1865...	\$432,757,604	\$402,965	\$26,344,742	\$176,213,955	\$635,719,266	\$144 25	\$69 72
January 1, 1866...	425,839,319	392,070	26,000,420	298,588,419	750,820,228	144 50	69 20
January 1, 1867...	380,276,160	221,632	28,732,812	290,846,208	709,070,860	133 00	73 18
January 1, 1868...	356,000,000	150,127	31,597,883	299,747,569	687,504,279	133 25	75 04
January 1, 1869...	355,892,975	128,098	34,215,715	299,029,322	689,868,110	135 00	74 07
January 1, 1870...	356,000,000	113,098	89,762,664	298,904,029	695,779,791	120 00	83 33
January 1, 1871...	356,000,000	101,086	38,995,089	306,307,672	702,403,847	110 75	90 29
January 1, 1872...	357,500,000	92,801	40,767,877	328,463,431	726,826,109	109 50	91 32
January 1, 1873...	358,557,907	84,387	45,722,061	344,582,812	748,947,167	112 00	89 28
January 1, 1874...	378,401,702	79,637	48,544,792	350,848,236	777,874,367	110 25	90 70
January 1, 1875...	382,000,000	72,317	46,390,598	354,128,250	782,501,165	112 50	88 89
January 1, 1876...	371,827,220	69,042	44,147,072	340,479,756	762,523,690	112 75	88 69
January 1, 1877...	368,053,084	65,462	26,348,206	321,508,690	714,061,358	107 09	93 46
January 1, 1878...	349,943,776	68,532	17,764,109	321,672,505	689,443,922	102 87	97 21
January 1, 1879...	346,681,016	62,035	16,108,159	323,791,671	686,642,884	100 00	100 00
November 1, 1879...	346,681,016	61,305	15,710,900	337,161,418	692,631,759	100 00	100 00



one hundred dollars in gold was worth \$250 in Treasury notes on August 31, 1865, the day when the public debt was at its maximum, more than \$144; and on January 1, 1870, \$120; the Treasury notes and the national-bank notes have since that time, in value, until the beginning of the present year, retained the same purchasing power as gold coin. This is shown by the following table, which gives the average value of the dollar, in legal-tender paper dollars, during the month of January, from 1864 to 1878, and also on January 1 of the present year.

1864.	1865.	1870.	1871.	1872.	1873.	1874.	1875.	1876.	1877.	1878.	1879.
Cts.	Cts.	Cts.	Cts.	Cts.	Cts.	Cts.	Cts.	Cts.	Cts.	Cts.	Cts.
115.7	116.1	116.8	112.4	114.3	115.7	110.0	114.8	112.1	105.8	100.0	100.0

For the ten years the average amount of coin held in the Treasury was about ninety millions, while the average amount held by the banks, which was largely composed of special deposits, was about twenty millions. During this whole period gold coin has been used by the banks in comparatively small amounts, and by the people in the purchase of foreign goods and in the purchase of foreign currencies for other home purposes, it was first converted into Treasury notes, but since the day of the resumption of the Treasury note the bank note have been generally preferred in business transactions.

The following tables, giving the amount and kinds of currency in circulation, are obsolete, and must be superseded by new ones, as not only the paper currency but also the coin of the country cannot, for this reason, be accurately given, such total being affected by the amount of coin in the country. The latter amount is not known. The Director of the Mint has been four hundred and twenty-one millions on the first day of November in this year, of which one hundred and twenty-one millions was in silver coin. If this amount was in silver coin, the circulating medium on that date was composed of the following:

Outstanding.....	\$346,681,016
Notes outstanding.....	337,181,418
Treasury, less certificates held by the banks.....	157,960,193
Treasury.....	50,078,620
(October 2).....	42,173,731
Total of coin held by the people.....	231,478,515
.....	1,165,553,493

The total currency of the country on November 1 thus amounts to more than eleven hundred and sixty-five millions, or at least three hundred and eighty millions in excess of the gold coin.

of the highest point reached between the suspension and the resumption of specie payment.

It was generally supposed that upon the day of resumption the amount of available currency would be immediately increased by the addition to its volume of the coin of the country; but it is now evident that this expectation has not been realized. The Treasury owns nearly one hundred and fifty-eight millions of gold coin and bullion, a large portion of which is a basis for the redemption of the Treasury notes outstanding, and fifty millions of standard silver dollars and subsidiary coinage, none of which can properly be included in the aggregate circulation. The average gold coin held by the national banks as a reserve during the three years ending January 1, 1879, was about thirty millions. The coin upon the Pacific coast, in the State of Texas, and in the mountain districts of the country, amounting to say forty millions, as well as the subsidiary silver coin outstanding, amounting to thirty millions, had been continually in circulation previous to the present year. Deducting these amounts from the total, there would remain but about one hundred and twenty millions of currency in excess of previous years. Of this excess a large amount has probably been for many years hoarded by the people—now estimated to number forty-nine millions—and, if so, does not enter into circulation in any greater degree than before resumption. The hoarders of coin and of small savings are a timid class, who do not easily part with their treasure. The amount of coin and currency in actual circulation at the present time may not therefore be greatly in excess of the average amount during the last five years.

It is probable that at no time since the date of suspension has so large an amount of currency been needed for the legitimate purposes of business as during the present year. The harvests have been unprecedentedly large, while the value of agricultural products, owing to the short crops of other nations and the consequent demand for our products abroad, has greatly increased. There has also been a rise in wages, in the value of manufactured goods, in provisions, and in the prices of iron and other commodities.

If this statement is correct, it will explain the scarcity of currency in the city of New York during the last three months, and the consequent demand for additional issues; the amount of national-bank notes issued from September 1 to November 26, being nine millions, which is more than the increase for the ten months preceding. It will also explain why the banks in New York City have grudgingly presented for payment their legal-tender certificates, and have been obliged to designate one of their number as a depository for gold, on which Clearing-House certificates are issued and used in settling their exchanges.

Notwithstanding the large increase of specie in the country during the past year, the amount held by the banks has by no means increased in proportion. The amount held on October 1, 1878, was \$30,688,606; on the 1st day of January, 1879, \$41,499,757; and on the 2d of October last, \$42,173,732—showing an increase on that day of less than seven hundred thousand dollars since the date of resumption. The more recent returns, however, of the national banks in the city of New York to the clearing-house, show a further increase of \$27,633,032 of specie, and a loss in legal-tender notes of \$16,578,284, for the week ending November 22. The amount of cash reserve now required to be held by all of the banks is less than ninety-four millions, as will be seen by the following table, which gives the amount held and required for the banks in the city

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of New York, in the reserve cities, and for the other banks, separately, at the dates named :

## NEW YORK CITY.

	October 1, 1878.	January 1, 1879.	October 2, 1879.
Specie.....	\$13,294,602	\$18,161,093	\$19,349,868
Legal-tender notes.....	14,893,468	16,351,562	19,738,584
United States certificates of deposit.....	21,660,000	18,695,000	12,900,000
Amount held.....	49,848,070	53,207,655	51,988,452
Amount required.....	46,374,285	46,011,118	51,408,068

## OTHER RESERVE CITIES.

Specie.....	9,405,014	11,760,521	11,348,903
Legal-tender notes.....	19,413,438	21,811,373	19,819,282
United States certificates of deposit.....	10,035,000	9,185,000	13,135,000
Amount held.....	38,853,452	42,756,894	44,303,185
Amount required.....	23,402,748	23,496,840	26,952,810

## STATES AND TERRITORIES.

Specie.....	7,988,990	11,578,143	11,474,961
Legal-tender notes.....	30,064,665	32,374,428	29,628,096
United States certificates of deposit.....	965,000	1,035,000	733,000
Amount held.....	39,048,655	44,987,571	41,838,057
Amount required.....	13,738,718	13,807,826	15,419,246

## UNITED STATES.

Specie.....	30,688,606	41,409,757	42,173,732
Legal-tender notes.....	64,371,571	70,537,363	69,185,962
United States certificates of deposit.....	32,690,000	28,915,000	26,770,000
Amount held.....	127,750,177	140,952,120	138,129,694
Amount required.....	83,605,751	83,315,784	93,780,124

From this statement it will be seen that the banks outside of the large cities held, on October 2, \$11,474,961 of specie, which nearly equals three-fourths of the full amount of cash reserve which they are required to hold, while the banks in New York and in the other principal cities held in specie considerably less than one-half of their legal cash reserve.

The Comptroller urgently recommends that all the national banks shall take advantage of the present influx of gold to accumulate in their vaults an amount equal to the total cash reserve required by law. He indulges the hope that the reports of another year may show them to be possessed of at least \$100,000,000 of gold coin. If this coin, which is still flowing into the Treasury, shall also be largely accumulated by the banks, it will be more likely to become diffused among the people. This would certainly be the case if the smaller denominations of notes were withdrawn from circulation, which might perhaps be done without inconvenience if postal-orders were issued in small amounts and at a minimum cost at every post-office.

The addition of coin to the circulation should have the effect to reduce the amount of paper money if in excess of the wants of business, and to send homeward for redemption the legal-tender and national-bank notes. If the legal-tender notes accumulate in the Treasury, they cannot again be issued except upon requisitions of the govern-

ment; and the accumulation of such notes has a tendency to induce extravagant appropriations and expenditures, by Congress. The law, as it now stands, requires that the Secretary shall keep in circulation the legal-tender notes, which is not practicable; and their accumulation by him will lead to constant agitation of the subject in Congress and among the people, which discussions will encourage speculation and disturb the current of legitimate business. With the influx of specie it is important that such a paper currency shall be in circulation as can be easily retired, if in excess. A currency is needed which will act automatically and as a regulator, like the governor in machinery or the balance-wheel in the chronometer. The best currency is that which will most readily adapt itself to the needs of business, and its relative cost should not be taken into consideration; for the best money is always the cheapest in the end. This principle was recognized by those who reluctantly recommended and voted for the legislation which authorized the issue of Treasury notes as a temporary measure; and a review of the debates in Congress, while that measure was pending before it, will show that the principal objection to the bill was acknowledged, both by those who favored and those who opposed its passage, to be that the government circulating note did not have the chief attributes of a perfect currency, and that its issue would tend to disturb values, and thus derange the commerce and business of the country. "The Treasury note represents no business capital, and its volume is controlled, not by the demands of business and the wants of the country, but by the views and action of political parties, and of Congress. The national-bank note, on the other hand, is based upon eight hundred and thirty millions of bills receivable, and an equally large amount of other assets, a large proportion of which is readily convertible into money. The deposits and balances of the banks amount to more than six hundred millions, and their circulating notes are promptly redeemed, with but little expense to the holders, through the use of their assets, which represent their capital, surplus, and deposits. If more notes are issued to the banks than are necessary for the requirements of business, they can be easily retired. If a larger amount is desired, they can be readily obtained upon application in the manner provided by law.\*"

The Comptroller cannot too urgently ask the attention of Congress to the following views of Secretary Chase, as submitted by him in his annual report for 1862, just previous to the passage of the national-bank act:

"The recommendations, now submitted, of the limited issue of United States notes as a wise expedient for the present time, and as an occasional expedient in future times, and of the organization of banking associations to supply circulation secured by national bonds and convertible always into United States notes, and, after resumption of specie payments, into coin, are prompted by no favor to excessive issues of any description of credit moneys.

"On the contrary, it is the Secretary's firm belief that by no other path can the resumption of specie payments be so surely reached and so certainly maintained. United States notes, receivable for bonds bearing a secure specie interest, are next best to notes convertible into coin. The circulation of banking associations organized under a general act of Congress, secured by such bonds, can be most surely and safely maintained at the point of certain convertibility into coin. It temporarily these associations redeem their issues with United States

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\* Comptroller's report for 1878, p. 22.

notes, resumption of specie payments will not thereby be delayed or endangered, but hastened and secured; for just as soon as victory shall restore peace, the ample revenue, already secured by wise legislation, will enable the government, through advantageous purchases of specie, to replace at once large amounts, and, at no distant day, the whole of this circulation, by coin, without detriment to any interest, but, on the contrary, with great and manifest benefit to all interests.

"The Secretary recommends, therefore, no mere paper-money scheme, but, on the contrary, *a series of measures, looking to a safe and gradual return to gold and silver as the only permanent basis, standard, and measure of values recognized by the Constitution.*

"No country possesses the true elements of a higher credit; no country, in ordinary times, can maintain a higher standard of currency and payment than the United States."

Resumption has made the dollar of the same value at home and abroad. The refunding of the debt has placed idle funds in the hands of such holders as have declined to reinvest in the four per cents. The good harvests, the shipment of produce, the large annual production of gold and silver from the mines, and the importation of gold, which still continues, will certainly make money abundant, and have already stimulated speculation to an unhealthy degree, and will be likely to do so in the future. Not long hence the specie which has so long been hoarded, or which has hitherto been used only in payment to the government of duties on imports or in the purchase of foreign exchange, will be brought into general use. The effect of the present increasing and prospective redundancy of the currency\* is manifest in the transactions of the stock board during the last three months, which are said to be the largest on record, one-fourth of which are estimated to have been based upon stocks which pay no dividends. The increase in the market value of many classes of bonds which have heretofore been considered almost worthless has brought upon the market a flood of shares of mining and other corporations, many of them fictitious. The necessities of life, as well as articles of luxury, have sympathized in the upward movement, and their prices, if not already too high, are likely soon to rise beyond a reasonable limit.

The influx and accumulation of a large amount of specie may thus result in injury instead of benefit. The payment by the French nation to Germany of five thousand millions of francs brought about an unhealthy rise of prices and deranged the business of the German Empire, while France, notwithstanding the prompt liquidation of its enormous obligation, speedily recovered its wonted prosperity. In England, also, immediately after resumption, a similar financial revulsion was experienced. Leone Levi, in a late address,† refers to this subject as follows:

"Soon after the war ended, the Bank of England was ready to resume cash payments, and, with an increasing demand for produce and manufactures, commerce immediately revived. For a time the alternation of revival and depression continued; but from 1820 to 1824 trade was in a prosperous condition; the crops were abundant, and with an addition in the amount of bullion in the Bank of England, from £1,746,000

\* The total amount of specie imported from January 1, 1879, to November 15, is \$75,512,392, of which \$65,124,200 has arrived since August 1. The production of precious metals for the fiscal year 1879 is estimated by the Director of the Mint at \$79,711,990, of which \$33,899,858 is gold and \$40,812,132 is silver.

† Lecture on Commercial Crises, delivered at King's College, London, by Professor Leone Levi, Bankers' Magazine, New York, vol. xiii, p. 43.

in February, in 1820, to £6,092,000 in February, 1824, and a large addition to its deposits of from £5,000,000 in 1820, to £11,000,000 in 1824, speculation began to set in in earnest. Other circumstances contributed to this end. Government came forward in 1823 with a measure for the reduction of the rate of interest from five to four per cent. upon consols to the amount of £135,000,000, and in 1824 for the reduction of four to three per cent. on £80,000,000. The acknowledgment of the South American Republic introduced a new kind of commerce in loans and mining in foreign countries. A large number of companies were started for railroads, mining, canals, insurance, banking, gas, &c., six hundred and twenty-four in number, requiring a nominal capital of £372,000,000, for which, however, no more than £17,600,000 were actually advanced; and prices of all commodities, and of securities of all kinds, rose enormously, but the fall was as precipitous as the rise was unjustified, and to unbounded credit and confidence there soon succeeded a general distrust, during which the best securities could not be converted and goods were rendered unsalable."

History repeats itself; and the experience of England, and of Germany, and our own experience in former days, seem not unlikely again to be repeated in this country.

A currency which will adapt itself to the existing circumstances is particularly needed at the present time, and it will be the province of Congress to watch carefully the indications of an excess of paper money, and to prevent by proper legislation the mischief and danger of a redundant and non-elastic currency.

#### PROPOSED SUBSTITUTION OF TREASURY-NOTES FOR NATIONAL-BANK NOTES.

In order to save the net amount of about twelve millions of interest now paid by the government upon the bonds deposited by the banks to secure their circulating notes, it is proposed to abolish the national-banking system, and to substitute additional Treasury-notes for the notes now issued by the banks.

Such a measure, if adopted, will not result in profit to the government, because nearly the amount now paid in interest to the banks, as has already been seen, can be saved to the government by refunding the bonds bearing a higher rate of interest into those bearing interest at four per cent., while a further issue of Treasury-notes must necessarily arrest the operation of refunding the debt. The amount of annual loss, if refunding cease, will be \$10,558,030; but if refunding continue and the whole debt shall be eventually funded into three and one-half per cent. bonds, there will be an additional saving of nearly ten millions. Moreover, if, as is proposed in this measure, the government should issue all the circulation of the country in the form of Treasury-notes, it must keep on hand at all times, to protect this circulation, a large amount of reserve, the interest on which would amount to nearly as much as the net interest now received by the national banks.

The abolition of the national banking system would be immediately followed by the repeal of section 3412 of the Revised Statutes, imposing a tax of 10 per cent. upon State bank notes, thus reviving the diverse banking systems of forty different States, and with them the former rates of exchange between the commercial centers of the country and other points. The banks now organized under the national system would reorganize under the laws of the several States in which they

are located; and under those laws they would be enabled to realize much greater profits than they now receive, not alone from circulation, but, in addition, from the sale, at high rates, of sight bills of exchange, rendered necessary to internal commerce by the inequality in value, in different localities, of circulating notes issued under widely differing State systems. On the other hand, the people would be subject to losses, both on circulation and exchange, exactly corresponding to the gains of the banks. In further support of these propositions, the Comptroller ventures to repeat what has been previously stated by him:

"The government, unlike the banks, does not receive deposits nor loan money, and it must therefore provide for the redemption of its notes from its own resources. If it issues a small amount of currency, the amount of reserve required and the expense of redemption will be small; but if it issues the whole paper currency of the country, it must, when specie payments are reached, maintain a ratio of reserve equal to that of the Bank of England or the Bank of France, which is not less in either case than one-third of the amount of its issues. If the amount of government issues should reach 668 millions, which is the present volume of the currency, a reserve of 223 millions in coin must be kept on hand. The interest upon this amount of reserve, at the lowest government rate (4 per cent.), would be \$8,920,000. The expense of issuing the notes and the cost of redemption would also be large, and the total cost to the government, including the hazard attending the issue of so large an amount of money, would not probably be less than 10 millions of dollars annually. This amount is but three millions less than that of the net annual interest received by the national banks upon their bonds, and is much greater than the profits derived by them from their entire circulation.

"If the amount of Treasury notes should be largely increased, and be subject, as it will, to additional increase by each successive Congress, the ability of the government to redeem its issues will in time be questioned, and the amount and proportion of reserve required will need to be increased, thus adding materially to the expense attending such issues, meanwhile saving the government but little, if anything, by the transaction.

"It is believed by the Comptroller that this proposed substitution is impracticable, and that the repeal of the national-bank act will result, not in an additional issue of Treasury notes, but in the repeal of section 3412 of the Revised Statutes, consisting of four lines in the Statute Book, which is as follows:

"SEC. 3412. Every National banking association, State bank, or State banking association, shall pay a tax of ten per centum on the amount of notes of any person, or of any State bank or State banking association, used for circulation and paid out by them."

"The South desires the repeal of this section, because it believes that such repeal will be followed by the organization of numerous banks of circulation under State charters, which will, for the time being, at least, stimulate the business of that section of the country.

"The East and the North, and a portion of the West, in the event of the repeal of the National Banking System, will join with the South in the repeal of this section, but for a different reason, namely, to prevent the increase of the issue of Government notes, because they believe that a system of State bank notes, at the worst, can only injure the credit of individuals, while the unrestricted issue of United States notes will be likely to produce a new suspension of specie payments, and thereby in-

jure, not only every kind of private business, but also the credit of the nation. Those persons in the West who have been erroneously led to believe that the downfall of the National Banking System will be followed by an additional issue of greenbacks, will certainly find upon investigation that State Bank notes, not United States notes, will be almost immediately substituted for the present uniform National currency, accompanied with an increase in the cost of exchange, losses to the bill holders, and other evils which are inseparable from such issues.

"In New York and Massachusetts, Wisconsin, Minnesota, Iowa, and other States, provisions either of law or of the constitution now exist, which prohibit the issue of circulating notes unless secured in a manner similar to those issued under the provisions of the national banking system. As a consequence of these laws and constitutional provisions, the bonds now held in the Treasury at Washington will be largely transferred to the capitals of many of the States, the result being that while, contrary to the expectation of many, no great saving of interest to the government will ensue, the circulating notes of State associations, secured and unsecured, will soon fill the places now occupied by the uniform circulation of the national banks. But even if this circulation shall all be well secured, it will be impossible, under the varying legislation of different States, to secure the issue of a homogeneous currency of equal value throughout the country. Many useful restrictions may be adopted, but it would be hopeless to expect all the States to agree upon a central point of redemption outside of their own respective boundaries, or upon a uniform system of cash reserve, or upon similarity in form of public statements. State lines, as formerly, will bound the field of circulation of many of the Southern and Western issues, while the notes of New York and New England will not only monopolize the field within their own boundaries, but will successfully contest the privilege of circulation in those States remote from the commercial centers, which have no Eastern agency for the redemption of their notes. Eastern communities will suffer comparatively little from the unsound issues of other States, but those which are less favored with capital will, as of old, be the chosen field for the establishment of illegitimate corporations. The cost of exchange, which under the present system has, during the last fifteen years, nearly disappeared, will be again revived. The rate will not, perhaps, be so large as in former times, but yet large enough to be a grievous burden upon the business of the country.

"Few persons have a just conception of the many advantages possessed by a homogeneous currency, fully secured, the issue of a single system, redeemable at a common point, and exempt from the discount occasioned by an irregularity of value in different localities. Great pains have been taken to obtain an estimate of the amount of exchange issued annually upon New York by the Western and Southern States. The amount drawn upon New York alone is estimated at nearly three thousand millions of dollars annually; and it will not probably be an exaggeration to say that not less than four thousand millions of dollars are annually drawn in exchange by the West and South upon the East. The amounts drawn upon each other by the banks in the commercial cities and States of the East is also great. In 1859 the average cost of Southern and Western exchange upon New York was not less than from 1 to 1½ per cent. If this latter rate should be restored, the cost of exchange alone would be sixty millions annually; while if the rate were but one-half of one per cent., which was the current rate in the State of New York in the year 1860, a loss in exchange of twenty millions annually would en-



sue, to say nothing of the loss incident to the issues of banks not properly organized.

"The overthrow of the present well-established system, with its abundant capital and reserve, its large surplus, and its wise provisions, will be succeeded, either by two kinds of government notes, one or both at a discount for gold and of unequal current value, or by circulating notes issued under State authority. Either system will be bad. The one will be subject to the changing opinion of each successive Congress, and the other to the independent caprice of the legislatures of forty States.

"The proposition is to save money to the government, by placing the principal existing monetary institutions of the country in liquidation at a time when specie payment is assured, and the nation has just entered upon a new career of prosperity. There will be no saving to the government, but a loss of millions of dollars annually to the people, which loss will increase yearly with the growth of business and commerce between the different States."

#### THE VALUE OF CIRCULATION TO THE NATIONAL BANKS.

The Comptroller has, in previous reports, given tables showing the profit upon national-bank circulation. The refunding operations of the government and the consequent reduction in the rate of interest upon the bonds held by the banks as security for their circulating notes having diminished this profit, and the expectation that the further refunding of the public debt will diminish it yet more, render it necessary to again refer to the subject. The total amount of interest annually received by national banks upon the bonds deposited for the security of their circulation on November 1, ultimo, was \$17,152,396.75, as will be seen by reference to a table on page 27. If from this amount be deducted the interest upon that portion of these bonds on which the banks receive no circulation, namely, 10 per cent. (\$1,715,239.67), and the tax upon circulation of one per cent. (\$3,274,221), there will remain \$12,162,936, which was the net amount of interest received by the banks on that portion of the bonds deposited, equal to 90 per centum of the whole, which represents the entire amount on which the banks receive any additional income through the issue of circulation.

The banks now hold \$7,227,700 of called bonds, five and six per cents, upon which interest has ceased, which are classified as four per cents in the above calculation. The other five and six per cent. bonds held by the banks, with the exception of the Pacific Railroad bonds, amounting to \$4,465,000 only, known as currency sixes, will be payable by the government in a little more than a year, and will then be converted into bonds bearing a lower rate of interest. If all are converted into four per cent. bonds, the net amount of interest received by the banks, after making the same deductions as before, will be \$9,822,666. If the present capital of the national banks invested in bonds were loaned directly upon commercial paper, or upon bonds and mortgages, at eight per cent. it would yield annually \$29,722,656. The net interest to be derived from four per cent. bonds amounts, as has been seen, to \$9,822,666, and the interest upon the circulation issued upon these bonds when loaned at eight per cent. amounts to \$24,884,084, the interest on the bonds and the income on circulation making a total net income of \$34,706,750. The amount by which this latter sum exceeds that which the banks may derive from loaning their capital directly on commercial paper, or on bonds and mortgages, is \$4,984,094, and represents the profit on circulation. It is equal to 1.3 per cent. on the capital invested in bonds. The follow-

ing statement presents in one group the figures by which these results are obtained :

The interest at 8 per cent. per annum on the loanable amount of circulation is.....	\$24, 884, 084
The interest on the bonds deposited to secure the circulation when funded into 4 per cents, is .....	14, 552, 096
Gross amount received by the banks from bonds and loanable circulation..	39, 436, 180
From which deduct one per cent. of the issuable amount of circulation as the tax thereon and the interest on the margin in bonds deposited....	4, 729, 430
Net income upon the capital employed.....	34, 706, 750
The capital necessary to purchase the bonds pledged by the banks loaned at 8 per cent. per annum would produce.....	29, 722, 656
Difference, representing the profit on circulation if the whole amount available for use be loaned continually throughout the year.....	4, 984, 094

If the rate of interest on loans be taken at six per cent., instead of eight per cent., as above, a like computation shows that the profit on circulation does not exceed 1.7 per cent. on the capital invested. That the advantage to be derived from receiving and issuing circulating notes is not great, is evident from the fact to which the Comptroller has repeatedly called attention that there are in this country 1,005 State banks and 2,634 private bankers who decline to reorganize under the national system. Additional proof is also found in the fact that the amount of existing national-bank circulation is much less than that which under the law these banks might obtain upon their present capital by the deposit of additional bonds. This is shown in the following table:

Geographical divisions.	Capital.	Authorized circulation.	Circulation actually issued to the banks.	Remaining circulation not called for by the banks.
Eastern States.....	\$185, 086, 920	\$140, 418, 781	\$118, 742, 578	\$21, 676, 203
Middle States.....	169, 700, 095	142, 024, 725	115, 701, 970	26, 322, 755
Southern States.....	30, 428, 700	27, 150, 830	24, 028, 460	3, 122, 370
Western States.....	82, 751, 650	73, 226, 485	57, 878, 997	15, 347, 488
Pacific States and Territories.....	6, 100, 000	5, 190, 000	3, 306, 460	1, 883, 520
Totals .....	454, 067, 365	388, 010, 821	319, 658, 485	68, 352, 336

The total amount of circulation which by law might have been obtained by banks in operation, upon their paid-in capital stock, was on October 2, \$388,010,821, while the amount actually received by them at that date was \$319,658,485; showing that the banks already organized and in operation are entitled to receive \$68,352,336 additional circulation as soon as they see fit to deposit United States bonds to secure it. In other words, these banks already in operation can at any time, if any profit can be made by an additional issue, increase their circulation by more than one-fifth.

Bonds can now be purchased in the market at a small premium, and it is reasonable to suppose that if there were a profit on circulation, the banks now in successful operation, with a capital stock fully paid in, would at once avail themselves of the privilege of receiving and issuing the full proportionate amount allowed by law.



## ILLEGAL CERTIFICATION OF CHECKS.

On February 19 and March 3, 1869, two extraordinary acts in reference to the business of banking were passed by the Fortieth Congress, which enactments were subsequently embodied in sections 5207 and 5208 of the Revised Statutes. The first of these sections prohibits the loaning of money upon United States or national-bank notes as collateral security, with the purpose of withdrawing such notes from use, and the latter section prohibits the certification of checks drawn upon any national bank, unless the drawer has the money actually on deposit in such bank.

The violation of the first-named section is made a misdemeanor, and punished by a fine not exceeding one thousand dollars, and a further penalty equal to one-third of the money loaned. The officer or officers of the bank who shall make such a loan are also liable for a further penalty, equal to one-fourth of the money loaned. The penalty for the violation of the last-named section is forfeiture of the charter of the bank and the appointment of a receiver to close its affairs. It seems scarcely credible that it should have been found necessary to prohibit by positive legislation the practice by national banks, located in the principal commercial city of the country, of methods of business so inconsistent with the principles of good banking. But it was soon found that even this legislative prohibition was not sufficient in times of extraordinary activity in the stock-board to entirely prevent the illegal certification of checks. A few months later, therefore, the Committee on Banking and Currency of the House of Representatives, after an investigation which occupied some weeks,\* was instructed to inquire if any further legislation was necessary to prevent the improper certification of checks by the national banks, and to report by bill or otherwise.

In compliance with these instructions a bill was reported, which on June 19, 1870, passed the House, and which provided that any officer, clerk or agent of any national banking association who should violate the provisions of the act of March 3, 1869, relating to certified checks, should be deemed guilty of a misdemeanor, and be fined not more than five thousand dollars, or imprisoned not more than five years, or both, in the discretion of the court. This bill, like similar acts which preceded it, passed the House almost unanimously and with but little discussion. A Representative from New York City, who was also a member of the Committee on Banking and Currency, seemed to reflect the sentiment of the House and also of his constituents when he said: "I concur with my colleagues in regard to reporting this bill, after careful examination of the facts ascertained by the gold investigating committee and of the statements made by the substantial merchants of New York—not the speculators, either in produce or gold, but the men of solid parts, the men who look to the substantial interests of the people outside as well as inside their city, men of character and propriety."

The House bill of June 19, 1870, failed to pass the Senate, but the action of the House had the effect to largely diminish, although it did not entirely put an end to, this illegal practice.†

No complaints of its renewal reached the Comptroller until recently,

\* "Reports of Committees, H. R., Forty-first Congress, Second Session"—Gold panic investigation, page 23.

† The clearing-house association of the city of New York, which is composed of forty-five national, together with thirteen State banks, to which latter associations the legislation named did not apply, took action on this subject in November, 1873, by the appointment of a committee to consider and report upon "reforms in the banking business."

The committee in their report referred to this subject as follows: "Every bank in

when his attention was called to the large increase of certified checks among the clearing-house exchanges, their amount having risen from 31 millions on April 4, to 44 millions on June 14, to 60 millions on October 2, and finally to more than 90 millions on October 30 last. He was also advised of an informal conference of the presidents of some of the prominent banks, with the object of devising some plan to avoid the risk and loss of such overcertifications. It had also, about the same time, been brought to the knowledge of the Comptroller that certified checks, drawn upon an institution which was known to be largely addicted to this practice, had been refused by banks in good standing; whereupon he considered it his duty to exercise whatever power belonged to his office for the arrest and prevention of the custom complained of. He therefore, on the 29th ultimo, directed the national-bank examiner for the city of New York to examine such banks as were believed to be certifying checks illegally, and to report the facts to this Office; and a separate letter was transmitted to him on the same day requesting him to consult with the clearing-house committee, and to take its advice in reference to the best course to be pursued. The examiner soon after reported that nine of the city banks had at various times certified checks contrary to the provisions of the law, but that only five of them were largely given to the practice; and he added his opinion that the amount of such illegal certifications had been very much overstated by the public press.

A subsequent investigation was made on November 8, which was conducted in such manner as to avoid publicity; and the Comptroller was then advised that the certifications complained of had been very largely reduced in number and amount, and, in the cases of some banks, entirely discontinued, and that it was believed that in a short space of time all the banks would conform fully to the provisions of the statute.

Section 5239 of the Revised Statutes provides that every director of a national bank who participates in or assents to violation of law "shall be held liable in his personal and individual capacity for all damages which the association, its shareholders, or any other person shall have

the association is directly involved in the risks attending this practice. It multiplies excessively the sums which such institutions pass through the clearing-house, and the consequent balances of the exchanges with their associates, which the capital of such banks can never adequately guarantee.

"The most striking commentary upon the dangers of this practice was afforded during the late panic by the dealer of a bank who had largely received such favors, and who, seeing by its application to others that his own checks were in peril, declined, under advice of counsel, to cover them by a deposit, until otherwise assured that the bank could respond to these very obligations.

"No sufficient reason, in the opinion of your committee, can be given why a corporation should place itself without compensation and special security between two parties dealing with each other, and become the guarantor of either, in transactions entirely personal to themselves, simply because one or the other is a depositor in the institution. We have already stated that the safe custody of money payable 'on demand' is full compensation for its legitimate use, and the risks attending such a business are all that properly appertain to the profession of a banker. And if the rule be invariably observed of certifying checks only when the drawer has the full amount at his credit in the bank, no one can be injured or offended when he is treated in all respects like every other of his fellow-dealers. The restriction suggested will work favorably to every interest—to the banks, the shareholders, and their associates—by diminishing the risks now so widely incurred, and it also conforms to and confirms the law which Congress has established upon this subject in respect to national banks.

Your committee, therefore, recommend that in no case shall a check or other obligation be certified by a bank unless the amount of it is first found regularly entered to the credit of the dealer upon the books of the institution."

\* The report of the committee, it is said, failed of unanimous adoption by four votes only.



of such violation.

rafts, there would see  
may be collected from

The bank examiner has been instructed to report  
instance of overcertification which may come to his  
the Comptroller will not hesitate to enforce the pro-  
cedure thereto; and in the event of the appointment  
endeavor to have determined in the courts the  
liabilities of the directors for violation of the law  
mean time those banks which consider the law inimi-  
have the option either to conform to its provisions  
business under some banking system in which the  
them are so objectionable do not exist.

glad to be able to state that he has no reason to  
bank has been guilty of withdrawing circulating  
purposes, but the examiner has been directed to  
of section 5207, if such shall occur; and upon the  
rt the Comptroller will immediately transmit the  
er of the department for his action.

#### SECURITY OF CIRCULATING NOTES.

exhibits the classes and amounts of United States  
reasurer on the 1st day of November, 1879, to secure  
the circulating notes of the national banks:

	Authorizing act.	Rate of interest.	Amount.
February 8, 1861	.....	5 per cent. ....	\$2,221,000
July 17 and August 5, 1861	.....	do .....	33,971,750
March 3, 1863	.....	do .....	18,549,500
March 3, 1865	.....	do .....	33,200
do	.....	do .....	75,000
March 3, 1864	.....	5 per cent. ....	7,119,500
July 14, 1870, and January 20, 1871.	.....	do .....	124,182,100
do	.....	4½ per cent. ....	34,866,950
do	.....	4 per cent. ....	138,318,400
July 1, 1862, and July 2, 1864.	.....	6 per cent. ....	4,405,000
			363,802,400

5, the total amount of bonds held for this purpose  
which \$199,397,950 was in six per cents, and  
r cents. On October 1, 1870, the banks held \$246,-  
s and \$95,942,550 of five per cents. Since that time  
ember 1, 1879, a decrease of \$187,575,850 in six per  
decrease of \$35,359,050 in five per cents.

ending January 1, 1879, there was a decrease of  
r cents and of \$6,357,800 in five per cents. Since  
\$4,866,950 of four and one-half per cents, and since  
\$8,400 of four per cents, have been deposited. Since  
ry, 1879, there has been a decrease of \$12,652,650  
415,600 in five per cents, and \$12,138,800 in four and  
ille during the same period \$102,941,450 of four per  
sited. The banks still hold \$108,200 of six per cent.  
d \$7,119,500 of five per cent. ten-forty bonds, upon  
ased.

**SPECIE IN BANK AND IN THE TREASURY, AND ESTIMATED AMOUNT IN THE COUNTRY—SPECIE IN THE BANK OF ENGLAND AND IN THE BANK OF FRANCE.**

The table below exhibits the amount of specie held by the national banks at the dates of their reports for the last eleven years; the coin, coin-certificates, and checks payable in coin held by the New York City banks being stated separately.

Dates.	Held by national banks in New York City.				Held by other national banks.	Aggregate.
	Coin.	U. S. coin-certificates.	Checks payable in coin.	Total.		
Oct. 5, 1868.	\$1,608,623 24	\$6,390,140	\$1,536,353 66	\$9,625,116 90	\$3,378,596 49	\$13,003,713 39
Jan. 4, 1869.	1,002,760 48	18,038,520	2,348,140 49	22,289,429 97	7,337,320 29	29,626,750 26
Apr. 17, 1869.	1,652,575 21	3,720,040	1,469,826 64	6,842,441 85	3,102,090 30	9,944,532 15
June 12, 1869.	2,542,533 06	11,933,080	1,075,015 82	15,471,229 78	2,083,860 70	18,555,090 48
Oct. 9, 1869.	1,792,740 73	16,897,000	1,013,948 72	19,704,589 45	3,297,816 37	23,002,405 83
Jan. 22, 1870.	6,197,036 29	28,501,460	2,100,644 74	36,888,141 03	11,457,242 69	48,345,383 72
Mar. 24, 1870.	2,647,908 39	21,872,480	1,060,094 30	25,580,482 60	11,507,060 75	37,087,543 44
June 9, 1870.	2,942,400 24	18,660,920	1,163,905 88	22,767,226 12	8,332,211 66	31,099,437 78
Oct. 8, 1870.	1,607,742 91	7,533,000	3,094,006 42	13,135,649 33	5,324,362 14	18,460,011 47
Dec. 28, 1870.	2,268,581 96	14,063,540	3,748,126 87	20,080,248 83	6,227,002 76	26,307,251 59
Mar. 18, 1871.	2,982,153 61	13,099,720	3,829,881 64	19,911,757 25	6,857,409 39	25,769,166 64
Apr. 29, 1871.	2,047,930 71	9,845,080	4,382,107 24	16,275,117 95	6,456,909 07	22,732,027 02
June 10, 1871.	2,240,408 06	9,161,160	3,680,854 92	15,091,422 98	6,833,532 18	19,924,955 16
Oct. 2, 1871.	1,121,869 40	7,590,280	1,163,628 44	9,875,757 84	3,377,240 33	13,252,998 17
Dec. 16, 1871.	1,454,930 73	17,354,740	4,255,631 39	23,065,302 12	6,529,967 43	29,595,269 56
Feb. 27, 1872.	1,490,417 70	12,341,060	3,117,100 90	16,948,578 60	8,559,246 72	25,507,825 32
Apr. 19, 1872.	1,828,639 74	10,102,400	4,715,364 25	16,646,423 99	7,787,475 47	24,433,899 46
June 10, 1872.	3,782,009 64	11,411,160	4,219,419 52	19,414,489 16	4,842,154 98	24,256,644 14
Oct. 8, 1872.	920,767 37	5,454,580		6,375,347 37	3,854,409 42	10,229,756 79
Dec. 27, 1872.	1,806,091 05	12,471,040		13,778,031 05	5,269,305 40	19,047,336 45
Feb. 28, 1873.	1,938,769 80	11,539,760		13,498,549 86	4,279,123 07	17,777,673 53
Apr. 25, 1873.	1,344,950 93	11,743,320		13,088,250 03	3,780,557 81	16,868,808 74
June 13, 1873.	1,442,097 71	22,139,080		23,581,177 71	4,368,909 01	27,950,086 72
Sept. 12, 1873.	1,063,210 55	13,522,600		14,585,810 55	5,282,658 90	19,868,469 45
Dec. 26, 1873.	1,376,170 50	18,325,760		19,701,930 50	7,205,107 08	26,907,037 58
Feb. 27, 1874.	1,167,820 09	23,518,640		24,686,460 09	8,679,403 49	33,365,863 58
May 1, 1874.	1,530,282 10	23,454,660		24,984,942 10	7,585,027 16	32,569,969 26
June 26, 1874.	1,842,625 00	13,671,660		15,514,185 00	6,812,022 27	32,326,207 27
Oct. 2, 1874.	1,291,786 56	13,114,480		14,406,266 56	6,834,678 67	21,240,945 23
Dec. 31, 1874.	1,443,215 42	14,410,940		15,854,155 42	6,582,605 62	22,436,761 04
Mar. 1, 1875.	1,084,555 54	10,622,160		11,706,715 54	4,960,390 63	16,667,106 17
May 1, 1875.	930,105 76	5,733,220		6,663,325 76	3,937,035 88	10,600,361 64
June 30, 1875.	1,023,015 86	12,642,180		13,665,195 86	5,294,386 44	18,959,582 30
Oct. 1, 1875.	753,904 00	4,201,720		4,955,624 00	3,094,704 83	8,050,329 73
Dec. 17, 1875.	869,436 72	12,532,810		13,402,246 72	3,668,659 18	17,070,905 90
Mar. 10, 1876.	3,261,131 36	19,086,920		22,348,051 36	6,729,294 49	29,077,345 85
May 12, 1876.	832,313 70	15,183,760		16,016,073 70	5,698,520 66	21,714,594 36
June 30, 1876.	1,214,522 92	16,872,780		18,087,302 92	7,131,167 06	25,218,469 98
Oct. 2, 1876.	1,129,814 34	13,446,760		14,576,574 34	6,785,079 09	21,361,653 03
Dec. 22, 1876.	1,474,701 83	21,692,900		23,037,601 83	9,962,046 06	32,999,647 89
Jan. 20, 1877.	1,669,284 94	33,629,680		35,298,964 94	14,410,322 61	49,709,287 55
Apr. 14, 1877.	1,930,725 59	13,869,180		15,829,905 59	11,240,132 19	27,070,037 78
June 22, 1877.	1,423,258 17	10,324,320		11,747,578 17	9,568,417 89	21,335,996 06
Oct. 1, 1877.	1,538,486 47	11,409,020		12,948,406 47	9,710,413 84	22,658,820 31
Dec. 28, 1877.	1,955,746 20	19,119,080		21,074,826 20	11,832,924 50	32,907,750 70
Mar. 15, 1878.	2,428,797 44	35,003,220		37,432,017 44	17,290,040 58	54,722,058 02
May 1, 1878.	2,088,092 00	25,397,640		27,485,732 06	17,938,624 00	45,424,356 06
June 29, 1878.	1,905,705 22	11,954,500		13,860,205 22	15,391,264 55	29,251,469 77
Oct. 1, 1878.	1,779,792 43	11,514,810		13,294,602 43	17,394,004 16	30,688,606 59
Dec. 6, 1878.	4,009,299 01	12,277,180		16,286,479 01	18,068,771 35	34,355,250 36
Jan. 1, 1879.	5,421,552 49	12,730,544		18,161,092 49	23,338,664 83	41,499,757 32
Apr. 4, 1879.	5,312,966 90	12,230,940		17,533,906 90	23,614,656 51	41,148,563 41
June 14, 1879.	6,058,472 34	12,291,270		18,349,742 34	23,983,545 10	42,333,287 44
Oct. 2, 1879.	7,218,967 69	12,130,900		19,349,867 69	22,823,873 54	42,173,731 23

The amount of silver coin held by the national banks on October 1, 1877, was \$3,700,703, and on October 1, 1878, \$5,387,738. The amount held on October 2, 1879, was \$4,986,493. The aggregate amount of specie held by the State banks in New England, New York, New Jersey, Pennsylvania, Maryland, Louisiana, Kentucky, Ohio, Iowa and Wisconsin, as shown by their official reports for 1879, was \$1,971,362, of which the banks in New York City held \$1,389,551. In the returns from California the amount of coin is not given separately.



and silver in the Treasury of the United States  
 as, in gold, \$171,517,713; silver coin, \$50,078,620;  
 of this amount \$14,501,000 in gold and \$6,135,850  
 and by coin-certificates.

Mint in his report for this year estimates that the  
 country on June 30, 1878, was \$327,781,898, of  
 gold and \$80,352,328 was silver. His estimates  
 ending June 30, 1879, are as follows:

in the country June 30, 1878.....	\$327,781,898
year.....	39,290,009
year.....	26,518,642
the year.....	5,180,015

of gold for the year.....	398,770,564
	228,881

ount of coin in the country June 30, 1879..... 398,541,683

s estimated that \$286,490,698 consists of gold coin,  
 silver coin. The Director estimates that from the  
 ar to November 1 there has been added to the  
 old and \$9,405,370 of silver, making the stock of  
 at the latter date \$427,206,852, consisting of  
 coin and \$121,456,355 of silver coin. The amount  
 ts and New York assay office on November 1st is  
 49,931,035 of gold and \$4,553,182 of silver, making  
 ich, added to the estimated amount of coin stated  
 otal estimated amount of coin and bullion in the  
 1st, \$481,691,069, of which \$355,681,532 was gold  
 silver.

shows the amount of bullion held by the Bank of  
 from 1870 to 1879:\*

(\$ = 5 dollars.)		(\$ = 5 dollars.)	
.. \$103,900,000	1875.....	\$119,600,000	
.. 117,950,000	1876.....	143,500,000	
.. 112,900,000	1877.....	126,850,000	
.. 113,500,000	1878.....	119,200,000	
.. 111,450,000	1879+.....	150,942,980	

a held by the Bank of France on December 31 of  
 to 1878, and also on October 30, 1879, is shown by

ate.	Gold coin and bullion. (5 fr. = \$1.)	Silver coin and bullion. (5 fr. = \$1.)	Total.
.....	885,740,000	\$13,700,000	899,440,000
.....	110,680,000	16,240,000	126,920,000
.....	131,740,000	26,520,000	158,260,000
.....	122,200,000	31,260,000	153,460,000
.....	204,220,000	62,640,000	266,860,000
.....	234,800,000	101,000,000	335,800,000
.....	306,080,000	127,720,000	433,800,000
.....	235,420,000	173,080,000	408,500,000
.....	190,720,000	211,620,000	402,340,000
.....	169,000,000	241,800,000	410,800,000

the Statistical Society, June, 1879.

November 8, 1879.

Statistique, as quoted in the Bankers' Magazine, New York,  
 the item for the present year, which was obtained from the  
 New York, of November 15, 1879.

## LOANS AND RATE OF INTEREST OF NEW YORK CITY BANKS.

The following table contains a classification of the loans of the national banks in New York City for the last five years:

Loans and discounts.	October 1, 1875.	October 2, 1876.	October 1, 1877.	October 1 <sup>st</sup> 1878.	October 2, 1879.
	48 banks.	47 banks.	47 banks.	47 banks.	47 banks.
On endorsed paper .....	\$120,180,537	\$95,510,311	\$92,018,776	\$83,924,333	\$81,520,129
On single-name paper .....	18,553,100	16,634,532	15,800,540	17,207,475	22,491,924
On U. S. bonds on demand .....	4,934,674	6,277,492	4,763,448	7,003,085	8,286,555
On other stock, &c., on demand .....	50,179,384	58,749,574	48,376,633	51,152,021	78,062,085
On real-estate security .....	868,160	536,802	497,524	780,514	679,021
Payable in gold .....	3,454,276	4,681,570	4,319,014	6,752,181	.....
All other loans .....	3,908,602	1,852,044	2,760,456	2,670,371	4,821,216
Totals .....	202,089,738	184,243,225	169,162,391	169,585,980	195,851,902

The average rate of interest in New York City for each of the fiscal years from 1874 to 1879, as ascertained from data derived from the Journal of Commerce and Financial Chronicle, was as follows:

1874, call loans, 3.8 per cent.; commercial paper, 6.4 per cent.  
 1875, call loans, 3.0 per cent.; commercial paper, 5.6 per cent.  
 1876, call loans, 3.3 per cent.; commercial paper, 5.3 per cent.  
 1877, call loans, 3.0 per cent.; commercial paper, 5.2 per cent.  
 1878, call loans, 4.4 per cent.; commercial paper, 5.1 per cent.  
 1879, call loans, 4.4 per cent.; commercial paper, 4.4 per cent.

The average rate of discount of the Bank of England for the same years was as follows:

During the calendar year ending December 31, 1874, 3.69 per cent.  
 During the calendar year ending December 31, 1875, 3.23 per cent.  
 During the calendar year ending December 31, 1876, 2.61 per cent.  
 During the calendar year ending December 31, 1877, 2.91 per cent.  
 During the calendar year ending December 31, 1878, 3.78 per cent.  
 During the fiscal year ending June 30, 1879, 3.87 per cent.

The rate of interest in the city of New York on November 25, of the present year, as quoted in the Daily Bulletin, was, on call loans, from 5 to 7 per cent.; and on commercial paper of the best grade, from 5½ to 7 per cent.

The rate of interest of the Bank of England on November 29, 1877, was four per cent. On January 30, 1878, it was two per cent., from which date to October 14, 1878, there were seven changes, and, with a single exception, on May 29, a gradual increase. The rate was fixed at the date last named at six per cent., and reduced on November 21, 1878, to five per cent.; since which time there have been changes in the rate as follows: On January 15, 1879, four per cent.; on the 29th of the same month, three per cent.; on March 12 it was reduced to 2½ per cent., and again on April 9 to two per cent., at which rate it remained until November 7, when it was increased to three per cent., which was also at that time the rate of the Bank of France.

## TRANSACTIONS OF THE NEW YORK CLEARING HOUSE.

The New York Clearing House Association is composed of forty-five national and thirteen State banks, and the assistant treasurer of the United States at New York. The exchanges at the Clearing House for

the year ending October 1, 1879, obtained through the courtesy of W. A. Camp, its manager, were more than twenty-four thousand millions, and the balances paid in money were more than thirteen hundred millions. The average daily exchanges were nearly eighty millions, and the average daily balances paid in money were but about four and three-tenths millions, or only five and four-tenths per cent. of the amount of the settlements.

The New York Clearing House was organized in 1853, and the following table exhibits its transactions and the amount and ratio of currency required for the payment of daily balances, yearly, for the last twenty-six years :

Years.	No. of banks.	*Capital.	Exchanges.	Balances paid in money.	Average daily exchanges.	Average daily balances paid in money.	Ratios.
							<i>Pr. ct.</i>
1854	50	\$47,044,900	\$5,750,455,087	\$297,411,494	\$19,104,505	\$988,078	5.2
1855	48	48,884,180	5,362,012,098	289,694,187	17,412,052	940,565	5.4
1856	50	52,883,700	6,000,213,328	394,714,489	22,278,108	1,079,724	4.8
1857	50	64,430,200	8,333,226,718	365,313,902	26,968,371	1,182,246	4.4
1858	46	67,146,018	4,756,664,386	314,238,911	15,393,736	1,016,954	6.6
1859	47	67,921,714	6,448,005,958	363,984,683	20,867,333	1,177,944	5.6
1860	50	69,907,435	7,231,143,057	380,693,438	23,401,757	1,232,018	5.3
1861	50	68,900,605	5,915,742,758	353,383,944	19,269,520	1,151,988	6.0
1862	50	68,375,820	6,871,443,591	415,530,331	22,237,682	1,344,758	6.0
1863	50	68,072,508	14,867,597,849	677,626,488	48,428,658	2,207,252	4.6
1864	49	68,586,703	24,097,196,656	885,719,305	77,984,455	2,866,405	3.7
1865	55	80,368,613	26,052,384,342	1,035,765,108	84,796,040	3,373,828	4.0
1866	58	82,370,200	28,717,146,014	1,060,135,106	93,541,195	3,472,753	3.7
1867	58	81,770,200	28,675,159,472	1,144,963,451	93,101,167	3,717,414	4.0
1868	59	82,270,200	28,484,288,637	1,125,465,237	92,182,164	3,642,250	4.0
1869	59	82,720,200	37,497,028,987	1,120,318,308	121,451,393	3,637,397	3.9
1870	61	84,620,200	27,894,539,406	1,036,484,822	90,274,479	3,365,210	3.7
1871	62	84,420,200	29,300,080,682	1,260,721,029	95,183,074	3,927,696	4.1
1872	61	84,420,200	32,636,097,404	1,213,293,827	105,904,277	3,939,266	3.7
1873	59	83,370,200	33,972,773,943	1,152,372,108	111,022,137	3,765,922	3.4
1874	59	81,632,200	20,850,681,063	971,231,281	68,139,884	3,173,958	4.7
1875	59	80,438,200	23,042,276,858	1,104,346,845	75,301,658	3,608,977	4.8
1876	59	81,731,200	19,674,815,361	1,009,532,067	64,738,812	3,288,381	5.1
1877	58	71,088,200	20,876,555,937	1,018,256,483	68,447,724	3,328,710	4.9
1878	57	63,611,500	19,922,733,947	951,750,454	65,106,574	3,111,015	4.8
1879	59	60,806,200	24,563,196,689	1,321,119,298	79,977,839	4,308,320	5.4
		172,217,969	408,092,108,926	21,156,276,411	162,498,634	6,647,811	4.2

\*The capital stock is stated at various dates, the amount at a uniform date in each year not being obtainable.

†Yearly averages for twenty-six years.

:Totals for twenty-six years.

The Clearing House transactions of the assistant treasurer of the United States at New York, from the 25th of November, 1878, when he became a member of the Clearing House Association, to November 1, 1879, were as follows :

Exchanges received from Clearing House	\$374,503,874
Exchanges delivered to Clearing House	105,551,028
Balances paid to Clearing House	275,296,906
Balances received from Clearing House	6,343,062
Showing that the amount paid by the assistant treasurer to the Clearing House was in excess of the amount received by him	268,952,846

During the month of October last the exchanges made at the Clearing House amounted to \$3,539,807,083, which included the business of the assistant treasurer, amounting to \$44,323,506. The balances paid during that month amounted to \$130,138,117, including \$27,037,192 paid by the assistant treasurer, of which \$13,475,000 was paid in gold, while the

banks paid \$28,180,000 in gold, making the total gold payments for the month \$41,655,000, or a daily average of \$1,581,000—\$1,080,000 by the banks, and \$501,000 by the assistant treasurer.

A table compiled, for purposes of comparison, from returns made to the New York Clearing House, will be found in the appendix, giving the clearings and balances weekly, for the months of September, October and November of various years, from 1869 to 1879.

**NATIONAL-BANK AND LEGAL-TENDER NOTES BY DENOMINATIONS.  
CIRCULATING-NOTES OF THE BANK OF FRANCE AND IMPERIAL BANK  
OF GERMANY BY DENOMINATIONS.**

The following table exhibits, by denominations, the amount of national-bank and legal-tender notes outstanding on November 1, 1879:

Denominations.	1879.			1878.	1877.
	Amount of national-bank notes.	Amount of legal-tender notes.	Aggregate.	Aggregate.	Aggregate.
Ones .....	\$3,567,200	\$19,320,302	\$22,887,502	\$24,652,750	\$28,606,915
Twos .....	2,092,498	18,938,365	21,030,863	22,915,066	20,883,428
Fives .....	97,911,820	61,611,033	159,522,853	148,116,015	146,444,048
Tens .....	109,736,240	71,711,318	181,447,558	168,908,071	161,459,711
Twenties .....	72,652,160	68,793,773	141,445,933	131,785,709	126,290,995
Fifties .....	21,324,900	24,853,045	46,177,945	47,658,995	52,363,815
One-hundreds .....	26,911,600	31,428,189	58,339,789	58,331,470	58,976,670
Five-hundreds .....	641,500	22,446,500	23,088,000	31,159,000	35,956,000
One-thousands .....	283,000	22,828,500	23,111,500	33,794,500	34,380,500
Five-thousands .....		3,250,000	3,250,000		
Ten-thousands .....		2,500,000	2,500,000		
Add for fractions of notes not presented or destroyed .....	13,586		13,586	11,561	10,800
Totals .....	335,134,504	347,681,016	682,815,520	667,333,137	671,372,882
Deduct for legal-tender notes destroyed in Chicago fire .....		1,000,000	1,000,000	1,000,000	1,000,000
Totals .....	335,134,504	346,681,016	681,815,520	666,333,137	670,372,882

Section 5175 of the Revised Statutes provides that "after specie payments are resumed no association shall be furnished with notes of a less denomination than five dollars." Accordingly no notes of the denominations of one and two dollars have been issued since the first day of January last: The amount of these notes outstanding on the 1st of November, 1878, was \$4,284,219 in ones, and \$2,582,146 in twos. The whole amount of one and two dollar notes outstanding on the 1st of November, 1879, was \$5,659,698, which shows a reduction during the past year of \$1,206,667. The amount of legal-tender notes of these denominations outstanding on the 1st of November, 1878, was \$40,701,451, and the total reduction of ones and twos during the year has been \$2,442,784. Of the entire amount of national-bank and legal-tender notes now outstanding, six per cent. consists of one and two dollar notes; thirty per cent. of ones, twos, and fives; and fifty-six per cent. is in notes of a less denomination than twenty dollars. Of their entire issue, less than twenty-two per cent. in amount is of the denomination of fifty dollars and upwards.



The following table\* exhibits by denominations the circulation of the Imperial Bank of Germany on January 1, 1879, in thalers and marks, which have been converted into our currency:

Thalers.				Marks.			
Number of pieces.	Denominations.	Value of each piece in dollars.	Amount in dollars. (Thaler = 75 cents.)	Number of pieces.	Denominations.	Value of each piece in dollars.	Amount in dollars. (Mark = 25 cents.)
194	500 thalers.	375. 00	72, 750	218, 444	1, 000 marks.	250	54, 611, 000
2, 517	100 thalers.	75. 00	188, 775	207, 018	500 marks.	125	25, 877, 250
1, 743½	50 thalers.	37. 50	65, 456	3, 395, 050½	100 marks.	25	84, 876, 487
9, 194	25 thalers.	18. 75	172, 388				
9, 311½	10 thalers.	7. 50	69, 836				
22, 962	-----	-----	569, 205	3, 820, 521½	-----	-----	165, 384, 737

The following table\* gives the circulation of the Bank of France and its branches, with the number of pieces, and the denominations in francs and in dollars, on January 30, 1879:

Number of pieces.	Denominations.	Value of each piece in dollars.	Amount in francs.	Amount in dollars. (Fr. = 20 cents.)
5	5, 000 francs.	1, 000	25, 000	5, 000
1, 382, 379	1, 000 francs.	200	1, 382, 379, 000	276, 475, 800
753, 599	500 francs.	100	376, 799, 500	75, 359, 900
3, 087	200 francs.	40	617, 400	123, 480
5, 046, 031	100 francs.	20	504, 603, 100	100, 920, 620
316, 166	50 francs.	10	15, 808, 300	3, 161, 660
29, 525	25 francs.	5	738, 125	147, 625
426, 537	20 francs.	4	8, 530, 740	1, 706, 148
206, 653	10 francs.	2	1, 033, 263	206, 653
1, 245	Forms out of date.	-----	436, 400	87, 280
8, 165, 227	-----	-----	2, 290, 970, 830	458, 194, 166

The amount of circulation of the Bank of France on December 31, 1877, was 2,547,044,000 francs, or say \$509,408,800, showing a reduction between that time and January 30, 1879, the date of the foregoing table, of 256,073,170 francs, or \$51,214,634.

It will be seen that the Imperial Bank of Germany issues no notes of a less denomination than \$7.50, and that the Bank of France issues but about two millions of dollars in notes of a less denomination than five dollars. The Bank of England issues no notes of less than twenty-five dollars, and the Banks of Ireland and Scotland none less than five dollars.

The amount of paper circulation in this country in denominations of less than ten dollars was \$203,441,218 on November 1, 1879. In the foreign countries named a large amount of silver and gold coin of the lower denominations enters into general circulation. If the people of the United States continue to prefer a paper circulation of small notes, and the laws of the country authorize it, it will be impossible to keep in circulation any large amount of silver dollars, or of the smaller denominations of gold coins.

Section 5182 of the Revised Statutes requires that the circulating notes of the national banks shall be signed by the president or vice-

\* See pages 788 and 793 of London Bankers' Magazine for September, 1879.

president and the cashier of the association issuing the same. The written signature of at least one bank officer is necessary as a check between this office and the issuing banks; for if an illegal issue should occur the signature of such officer would be a means of determining the genuineness of the note. The written signatures of the officers of the banks are also necessary as an additional precaution against counterfeiting. A number of the banks, however, issue their notes with printed signatures, and in some cases with badly-executed lithographic ones.

Bills have been introduced in Congress imposing a fine of twenty dollars for every circulating note issued by any national bank without the written signature thereon of at least one of its officers; and the Comptroller respectfully repeats his previous recommendation for the passage of such an act, which act shall also impose a fine upon any engraver or lithographer who shall print the signatures of bank officers upon such circulating notes.

#### LIQUIDATION OF INSOLVENT BANKS.

Since the establishment of the national banking system eighty-one national banks have become insolvent and been placed in the hands of receivers. The following table gives for each State and Territory the number of national banks which have failed since the commencement of the system, a period of sixteen years, with their capital, the amount and percentage of dividends paid to creditors, and the estimated losses. In the States and Territories which do not appear in this table no national banks have failed.

State.	No. of banks.	Capital.	Claims proved.	Dividends paid.	Estimated dividends yet to be paid.	Estimated losses.	Percentage of claims paid.
Vermont .....	1	\$100,000	\$81,665	\$30,378	\$57,287	\$4,000	25
Connecticut .....	1	60,000	97,541	82,910	4,631	10,000	85
New York .....	17	4,176,100	5,896,653	5,298,997	325,025	272,631	89.86
Pennsylvania .....	10	1,449,500	2,106,522	1,085,539	517,183	521,800	50.72
Dist. of Columbia .....	3	830,000	2,123,303	1,501,998	106,635	424,670	70.74
Virginia .....	4	900,000	1,447,673	677,940	66,159	703,574	46.53
Alabama .....	1	100,000	201,308	122,340	.....	168,950	42
Mississippi .....	1	50,000	83,682	11,771	.....	21,861	35
Louisiana .....	3	1,600,000	2,061,554	1,989,887	68,817	922,000	66.74
Texas .....	1	50,000	74,406	7,307	7,099	60,000	10
Arkansas .....	1	50,000	15,142	15,142	.....	.....	100
Tennessee .....	1	100,000	376,933	65,385	.....	211,597	17.33
Missouri .....	6	3,250,000	2,766,850	1,691,681	620,169	335,000	65.73
Ohio .....	3	250,000	382,187	215,446	18,635	153,056	56.88
Indiana .....	5	332,000	525,785	277,966	80,819	161,070	52.87
Illinois .....	9	2,750,000	3,828,268	1,672,496	358,672	1,497,198	57.50
Wisconsin .....	1	50,000	184,445	47,055	17,390	70,000	35
Iowa .....	3	180,000	311,180	182,311	23,881	94,998	58.3
Minnesota .....	2	200,000	318,048	216,275	52,773	45,000	68
Kansas .....	3	200,000	169,458	80,888	18,160	70,401	48
Colorado .....	2	225,000	389,997	52,816	169,181	163,000	13.54
Utah .....	1	150,000	80,200	21,756	.....	67,444	24.40
Nevada .....	1	250,000	170,012	153,012	.....	17,000	90
Montana .....	2	130,000	225,651	60,116	30,585	135,000	26.64
<b>Total .....</b>	<b>81</b>	<b>17,452,600</b>	<b>24,859,472</b>	<b>15,975,223</b>	<b>2,644,060</b>	<b>6,240,189</b>	<b>64.3</b>

There is no means of definitely determining the amount of losses sustained through the failures of banks operating under systems in vogue during the earlier periods of the history of this country. The losses under those systems, both to the note holders, to whom there can be no loss under the national system, and to their general creditors and shareholders, are known to have been large. The loss to noteholders alone is estimated to have been 5 per cent. annually upon the total amount of circulation outstanding. In Elliot's Funding System, on page 1176, it

is stated that fifty-five banks with an aggregate capital of \$67,036,265, and circulation of \$23,577,752, failed in 1841. The total bank capital of that year is stated by the same authority to have been \$317,642,692, and the circulation at \$121,665,198; and it is also stated in the same connection that in nearly every instance the entire capital of the banks which failed was lost.

Numerous failures of private banking firms have occurred in this country within the last six years, and the losses consequent upon three or four of them are equal to the total losses which have occurred under the national system.

For the purpose of comparing the losses to creditors of insolvent national banks with those sustained by the creditors of insolvent banks other than national, much pains have been taken by the Comptroller to obtain as reliable and complete statistics as possible relating to the failures of State and savings-banks and private bankers in the different States during the three years ending January 1, 1879. The results of his labors in this direction are to be found in the following table:

State.	No. of banks.	Claims.	Amount paid and to be paid.	Losses.
Maine	17	\$5,127,905	*\$4,370,524	\$757,471
New Hampshire	11	4,884,216	3,622,804	1,261,412
Massachusetts	11	4,436,457	2,670,158	1,766,299
Boston	3	5,551,186	3,989,799	1,561,387
Rhode Island	13	12,001,826	10,746,354	1,255,270
Connecticut	7	3,960,821	2,066,805	1,894,016
New York	8	1,236,567	332,081	904,486
New York City	20	27,978,000	22,185,547	5,792,453
Pennsylvania	6	1,380,083	819,000	561,083
New Orleans	3	1,597,393	277,638	1,319,755
Kentucky	3	325,380	161,690	164,190
Ohio	18	3,054,135	1,138,085	1,916,050
Indiana	4	466,233	281,778	184,455
Illinois	49	10,038,221	3,915,169	6,123,052
Michigan	11	637,407	135,372	502,035
Iowa	7	730,786	85,266	645,520
Minnesota	1	78,000	45,708	32,292
Missouri	5	Not given	Not given	2,200,000
Kansas	8	337,082	97,875	271,207
Nebraska	5	110,000	24,000	183,271
Colorado	1	90,000	31,500	58,500
California	7	3,786,541	1,137,783	2,648,758
Dakota	1	45,000	18,000	27,000
Total	210	88,440,028	58,152,638	32,610,661

The amount of claims of five banks in Missouri, one in Kansas, and two in Nebraska could not be obtained.

In the foregoing table it has been found impossible to give the capital, or the exact amount of dividends paid to creditors, the liabilities and the losses only having been ascertained with any degree of accuracy. The differences between the two items last named represent the amount which it is assumed will eventually be paid to creditors. The average annual loss sustained by creditors during the past sixteen years by the insolvency of national banks throughout the United States, has been \$390,012, and that occasioned by the failures of banks other than national, as shown by the incomplete data obtained by the Comptroller, has for the last three years been not less than \$10,872,220.

In the States of Ohio and Illinois alone the losses during the last three years, through the failure of State, savings, and private banks and bankers, aggregated \$3,039,102, of which \$1,916,050 were in Ohio, and \$6,123,052 in Illinois. The total loss in these two States is greater by \$1,798,913 than the total loss to creditors by all the national bank failures which have ever occurred.

In the next table the losses to creditors through the failures of national banks in the cities of New York and Brooklyn, since the establishment of the system, are contrasted with those sustained through the insolvency of savings-banks in the same cities during the last eight years alone, with the names of the banks and the dates of the appointment of receivers:

## NATIONAL BANKS.

Name of bank.	Date of appointment of receiver.	Liabilities.	Dividends paid.	Estimated future dividends.	Estimated losses.
Farmers and Citizens' National Bank.	Sept. 6, 1867	\$1,181,197	\$1,138,732	.....	\$42,465
Croton National Bank.	Oct. 1, 1867	164,834	145,878	.....	18,956
Ocean National Bank.	Dec. 13, 1871	1,282,254	1,282,254	.....	.....
Union Square National Bank.	Dec. 15, 1871	157,120	167,120	.....	.....
Eighth National Bank.	Dec. 15, 1871	263,541	263,541	.....	.....
Atlantic National Bank.	Apr. 28, 1873	574,512	524,116	\$20,396	30,000
National Bank of Commonwealth.	Sept. 22, 1873	776,798	776,778	.....	.....
Totals for national banks	.....	4,400,256	4,289,439	20,396	91,421

## SAVINGS-BANKS.

Abington Square Savings Bank.	Aug. 28, 1876	\$87,907	\$25,930	\$10,560	\$51,507
Bond Street Savings Bank.	Sept. 26, 1876	1,284,884	881,334	128,489	275,071
Bowling Green Savings Bank.	Nov. 20, 1876	514,299	180,005	.....	334,295
Clairmont Savings Bank.	Sept. —, 1877	102,545	.....	.....	102,545
Clinton Savings Bank.	July 17, 1877	67,885	16,971	29,190	21,723
Central Park Savings Bank.	Nov. 30, 1875	40,888	.....	.....	40,888
German Savings Bank of Morrisania.	July 15, 1877	237,779	56,945	125,279	45,556
German Uptown Savings Bank.	Dec. 7, 1875	889,088	529,157	4,300	355,631
Guardian Savings Bank.	Nov. 17, 1871	561,652	533,569	28,082	.....
Long Island Savings Bank of Brooklyn.	Sept. 14, 1877	857,478	617,740	.....	239,738
Market Savings Bank.	Jan. 20, 1872	977,364	371,398	.....	605,966
Mechanics' and Traders' Savings Bank.	July 13, 1876	1,453,916	1,032,281	72,696	348,940
Mutual Benefit Savings Bank.	Nov. 28, 1875	437,496	253,747	21,674	161,876
New Amsterdam Savings Bank.	Sept. 29, 1876	511,992	391,830	.....	120,162
Oriental Savings Bank.	Dec. 19, 1877	182,278	54,683	54,683	72,911
People's Savings Bank.	Nov. 30, 1875	200,288	86,792	.....	113,497
Security Savings Bank.	June 28, 1876	395,518	223,062	15,821	156,615
Six Penny Savings Bank.	Mar. 29, 1878	1,783,408	1,158,965	350,682	267,762
Teutonia Savings Bank.	Apr. 26, 1878	881,000	440,500	396,450	44,050
Third Avenue Savings Bank.	Oct. —, 1875	1,396,138	200,471	139,614	1,047,054
Traders' Savings Bank.	Nov. —, 1876	79,114	11,867	.....	67,247
Yorkville Savings Bank.	June 24, 1877	20,022	.....	18,000	2,027
Totals for savings-banks	.....	12,953,048	7,076,267	1,401,720	4,475,061

The total losses by savings-banks in New York City for eight years, as shown by the above table, the data for which, in reference to savings-banks, were obtained from the report for 1879 of the superintendent of the banking department of the State of New York, have been \$4,475,061, and those by national banks in the same city for sixteen years, \$91,000.\*

Some inquiry has been made in reference to the expense of liquidating the affairs of national banks through the agency of receivers, an impression having prevailed that these expenses usually exhaust a large proportion of the assets. The following table has therefore been prepared, which shows by States and Territories the cost of the receiverships of insolvent national banks up to November 1 of the present year,

\* Data supplied by Dun, Barlow & Co., with reference to the failures in New York City of trust companies, State and savings-banks, private banking firms, and stock and money brokers, show failures since September, 1873, numbering 191. The aggregate liabilities reported in these cases were \$74,704,478, and the aggregate assets \$49,974,054, the excess of liabilities over assets being \$24,730,424.

in the form of percentages of the total expenses to the amount of money collected :

States and Territories.	No. of banks.	Capital.	Total net cash collected.	Receiver's salary.	Legal expenses.	Other expenses.	Total expenses.	Per cent. of total expenses to net cash.
Vermont.....	1	\$100,000	\$126,430 27	\$1,201 30	.....	\$722 67	\$1,923 97	1.5
Connecticut.....	1	60,000	115,832 82	4,075 00	\$2,000 00	52 00	6,127 00	5.3
New York.....	11	1,476,100	3,727,957 89	148,075 06	84,227 26	26,456 50	258,759 22	7.8
New York City.....	6	2,700,000	5,585,049 67	189,729 63	140,721 45	101,550 98	432,001 46	7.7
Pennsylvania.....	10	1,449,500	1,447,639 95	41,676 24	14,074 73	15,548 32	71,299 29	4.0
Dist. of Columbia.....	3	830,000	2,243,066 82	60,595 11	23,201 17	7,547 06	93,343 34	4.2
Virginia.....	4	900,000	1,404,186 49	39,424 72	8,734 53	21,695 91	69,855 16	4.7
Alabama.....	1	100,000	249,952 05	1,600 00	11,049 67	22,081 56	34,733 23	13.0
Mississippi.....	1	50,000	47,061 51	4,545 50	1,506 14	2,797 22	8,848 86	18.8
Louisiana.....	3	1,600,000	3,358,809 02	97,777 01	98,861 95	79,068 66	275,707 62	8.2
Texas.....	1	50,000	54,086 26	2,416 64	.....	2,023 89	4,440 53	8.1
Arkansas.....	1	50,000	66,742 02	1,650 00	6,372 54	.....	8,246 54	12.4
Tennessee.....	1	100,000	158,182 82	2,847 96	.....	.....	2,847 96	1.8
Ohio.....	3	250,000	401,974 45	17,383 42	1,201 76	9,116 41	27,701 59	6.8
Indiana.....	5	332,000	545,927 80	19,136 16	7,262 15	7,440 48	33,844 79	6.2
Illinois.....	2	100,000	234,008 04	8,333 26	7,668 11	8,847 27	19,848 64	8.5
Chicago.....	7	2,650,000	2,911,583 85	57,701 14	52,567 00	43,922 82	154,190 96	5.3
Wisconsin.....	1	50,000	109,874 52	5,125 00	1,351 10	2,127 50	9,203 40	8.4
Minnesota.....	2	200,000	401,029 84	9,606 50	8,204 20	5,571 77	23,382 47	5.8
Iowa.....	3	180,000	380,794 54	26,740 88	7,014 85	5,847 05	37,402 78	9.8
Missouri.....	4	750,000	559,792 53	12,505 34	6,073 13	10,774 74	29,353 21	5.2
Saint Louis.....	1	2,500,000	1,600,078 54	32,096 60	0,882 70	25,714 88	67,694 18	4.1
Kansas.....	3	200,000	204,448 06	12,236 10	8,130 25	596 01	21,362 36	10.4
Colorado.....	2	225,000	218,820 10	12,074 89	8,072 90	8,105 83	28,253 62	12.9
Utah.....	1	150,000	75,332 57	6,337 49	1,165 50	5,826 95	11,329 94	15.0
Nevada.....	1	250,000	347,982 08	31,253 75	9,091 10	12,515 88	52,860 13	15.0
Montana.....	2	150,000	189,650 45	5,500 00	40 25	1,474 98	7,015 23	3.7
Totals.....	81	17,452,600	26,825,477 76	848,644 70	521,074 44	418,658 34	1,788,377 48	6.7

If that portion of the amount realized from the sale of United States bonds which was necessary to redeem the circulation be omitted from the item of cash collected, the total expense of the liquidation of insolvent banks would be at the rate of 9.73 per cent.

A great many offsets are allowed by the receivers, in cases where parties having credits on the books of the bank are also indebted to it. Bad and doubtful assets are frequently compounded, or are exchanged for proved claims against the bank, under order of the court as provided by law. The cost of these operations is included in expenses in the foregoing table, but the sums thus liquidated do not appear in the amount of net cash collected.

Below is given a table showing the expense of liquidating the affairs of each insolvent national bank in the city of New York :

Name of bank.	Capital.	Total net cash collected.	Receiver's salary.	Legal expenses.	Other expenses.	Total expenses.	Per cent. of total expenses to total cash collected.	Per cent. paid to creditors.
Croton National Bank.....	\$200,000	\$374,009	\$22,500	\$17,242	\$3,368	\$48,109	12.8	88.5
Ocean National Bank.....	1,000,000	2,341,819	85,730	72,837	35,320	193,888	8.3	100
Union Square National Bank.....	200,000	242,544	10,000	4,831	580	15,410	6.3	100
Eighth National Bank.....	250,000	346,142	20,636	9,435	9,236	39,208	7.2	100
Atlantic National Bank.....	300,000	782,992	17,146	22,739	27,250	67,135	8.5	90
National Bank of Commonwealth.....	750,000	1,297,543	33,817	13,637	20,797	68,251	5.3	100
	2,700,000	5,585,049	189,729	140,721	101,551	432,001	7.6	98

A large portion of the expense incident to the receiverships of insolvent banks usually arises from litigation. Many persons who punctually pay their obligations to a bank which is in operation, do so only at the end of a lawsuit when the same bank has been placed in the hands of a receiver. Complicated questions arise in the enforced settlement of a bank's affairs, which are frequently carried up to the court of last resort before they are finally determined. The time necessary to the final closing of an insolvent bank being thus extended, the expenses of the receiverships are increased. In the case of national banks, however, these expenses are reduced as much as possible, by decreasing the salaries of the receivers and their assistants as the business of settlement of their affairs diminishes.

Although the expense attendant upon the liquidation of the affairs of insolvent national banks appears, in some instances, to be large, yet it is believed that the cost of receiverships under the national system is very much less than that usually incurred in the liquidation of insolvent estates and corporations under the laws of the different States.

#### NATIONAL BANK FAILURES.

Since November 1, 1878, receivers have been appointed for banks in operation at that date as follows:

	Capital.
First National Bank, Warrensburg, Mo .....	\$100,000
German-American National Bank, Washington, D. C .....	130,000
Commercial National Bank, Saratoga Springs, N. Y .....	100,000
National Bank, Poultney, Vt .....	100,000
First National Bank, Monticello, Ind .....	50,000
First National Bank, Butler, Pa .....	50,000
	<hr/> 530,000

Receivers have also been appointed for the German National Bank of Chicago, Ill., and for the Second National Bank of Scranton, Pa., both of which banks had previously gone into voluntary liquidation. This action was rendered necessary by complaints received that the affairs of these associations were not being properly managed by the officers or agents having them in charge, and the appointments were made under authority of the act of June 30, 1876.

Dividends have been paid to the creditors of six of the banks which have failed since November 1, 1878, as follows:

First National Bank of Warrensburg, Mo .....	10 per cent.
German-American National Bank, Washington, D. C .....	10 per cent.
German National Bank, Chicago, Ill. ....	25 per cent.
Commercial National Bank, Saratoga Springs, N. Y .....	60 per cent.
National Bank of Poultney, Vt .....	25 per cent.
First National Bank of Butler, Pa .....	15 per cent.

The aggregate amount of these dividends is \$187,752.83, and their average per cent. to claims proved is 22.66.

Dividends have also been paid to the creditors of banks which had failed prior to November 1, 1878, as follows:

First National Bank, New Orleans, La .....	.5 per cent. ; total, 70 per cent.
Ocean National Bank, New York City .....	.5 per cent. ; total, 100 per cent.
Crescent City National Bank, New Orleans, La .....	.5 per cent. ; total, 80 per cent.
Atlantic National Bank, New York City .....	.5 per cent. ; total, 90 per cent.

First National Bank Utah, Salt Lake City, Utah	9.4 per cent.	total, 24.4 per cent.
First National Bank, Tiffin, Ohio	19 per cent.	total, 66 per cent.
Charlottesville National Bank, Charlottesville, Va.	10 per cent.	total, 40 per cent.
City National Bank, Chicago, Ill.	25 per cent.	total, 70 per cent.
National Bank, Fishkill, N. Y.	10 per cent.	total, 55 per cent.
First National Bank, Franklin, Ind.	20 per cent.	total, 65 per cent.
Northumberland County National Bank, Shamokin, Pa.	12½ per cent.	total, 62½ per cent.
First National Bank, Winchester, Ill.	10 per cent.	total, 60 per cent.
National Exchange Bank, Minneapolis, Minn.	10 per cent.	total, 75 per cent.
National Bank State Missouri, Saint Louis, Mo.	35 per cent.	total, 70 per cent.
First National Bank, Delphi, Ind.	10 per cent.	total, 60 per cent.
First National Bank, Georgetown, Colo.	12½ per cent.	total, 12½ per cent.
Lock Haven National Bank, Lock Haven, Pa.	30 per cent.	total, 60 per cent.
Third National Bank, Chicago, Ill.	20 per cent.	total, 90 per cent.
Central National Bank, Chicago, Ill.	15 per cent.	total, 55 per cent.
First National Bank, Ashland, Pa.	100 per cent.	total, 100 per cent.
First National Bank, Tarrytown, N. Y.	10 per cent.	total, 80 per cent.
First National Bank, Allentown, Pa.	50 per cent.	total, 50 per cent.
First National Bank, Waynesburg, Pa.	40 per cent.	total, 40 per cent.
Washington County National Bank, Greenwich, N. Y.	50 per cent.	total, 100 per cent.
First National Bank, Dallas, Tex.	10 per cent.	total, 10 per cent.
People's National Bank, Helena, Mont.	15 per cent.	total, 15 per cent.
First National Bank, Bozeman, Mont.	40 per cent.	total, 40 per cent.
Merchants' National Bank, Fort Scott, Kans.	15 per cent.	total, 15 per cent.
Farmers' National Bank, Platte City, Mo.	100 per cent.	total, 100 per cent.

The total amount of dividends paid by the Comptroller to creditors of insolvent national banks during the year ending November 1, 1879, was \$1,909,595. The total dividends paid since the organization of the system is \$15,919,908, upon proved claims amounting to \$24,913,496. The dividends paid equal 64.16 per cent. of the amount of the claims.

Assessments amounting to \$6,320,250 have been made upon the shareholders of insolvent banks, for the purpose of enforcing their individual liability, of which amount \$1,816,007.82 has been collected in all, and \$357,173.82 of it during the past year.

A table showing the national banks which have been placed in the hands of receivers, the amount of their capital and of claims proved, and the rates of dividends paid, and also one showing the amount of circulation of such banks, issued, redeemed, and outstanding, will be found in the appendix.

#### THE LOSSES OF THE BANKS.

It is the practice of this office, under the law providing that reports shall be made by the national banks and published by them in such form as the Comptroller may require, to insist that all the assets of these associations shall appear in such reports at their real value, as nearly as such value can be determined, in order that the general public may not be deceived thereby.

To show the real state of facts in this respect, it is necessary that all losses and depreciations in values shall, as often at least as once in each six months, be charged to the profits of the bank. Where this rule is strictly followed, and dividends are determined in all cases by the remaining profits only, there is little danger of insolvency; since in most cases which have heretofore occurred the causes of insolvency can be traced to the accumulated losses of a long series of years, and the continuance of dividends regardless of such losses. The losses charged off semi-annually by national banks in the years 1876, 1877 and 1878, have been given, by States and reserve cities, in previous reports. The fol-

lowing table, similarly arranged, shows the number of banks which have charged off losses, and the amount of losses charged off by them, in each of the two periods of six months ending on March 1 and September 1, 1879, together with the total amount for the year; to which have been added the amounts charged off in each of the three preceding years:

States and Territories.	March 1, 1879.		September 1, 1879.		Total losses.
	No. of banks.	Losses.	No. of banks.	Losses.	
Maine.....	43	\$154,523 16	42	\$137,930 13	\$292,453 29
New Hampshire.....	27	52,749 00	28	103,734 00	156,483 00
Vermont.....	28	150,439 05	35	144,053 70	303,493 65
Massachusetts.....	134	1,155,600 64	141	972,937 54	2,128,538 18
Boston.....	50	1,284,879 30	45	1,370,511 28	2,655,390 58
Rhode Island.....	39	251,752 05	32	171,501 46	523,253 51
Connecticut.....	58	453,183 19	61	487,725 94	940,909 13
New York.....	145	677,580 82	150	821,412 49	1,499,002 31
New York City.....	41	1,148,856 07	40	1,980,700 70	3,135,557 37
Albany.....	6	115,338 99	7	116,831 57	232,170 56
New Jersey.....	55	383,108 80	50	307,204 83	690,313 72
Pennsylvania.....	140	579,140 70	142	563,256 39	1,142,397 09
Philadelphia.....	26	183,174 86	25	308,383 50	491,558 36
Pittsburgh.....	18	170,258 88	19	153,764 11	323,022 99
Delaware.....	5	4,211 79	0	8,981 52	13,193 31
Maryland.....	0	31,006 79	9	35,946 95	66,953 74
Baltimore.....	12	265,236 89	10	29,270 11	294,507 00
District of Columbia.....	1	749 76	0	.....	749 76
Washington.....	4	25,276 11	5	28,687 32	53,963 43
Virginia.....	15	43,532 73	16	116,071 48	159,604 21
West Virginia.....	7	30,228 42	5	14,109 20	50,337 62
North Carolina.....	8	14,980 74	9	02,636 18	77,616 92
South Carolina.....	8	50,477 56	10	260,719 11	311,196 67
Georgia.....	7	23,595 05	10	65,764 66	89,359 71
Florida.....	1	10 43	1	530 68	541 11
Alabama.....	7	26,404 19	9	36,396 85	62,801 04
New Orleans.....	7	150,923 53	7	121,966 34	272,889 87
Texas.....	7	7,232 08	11	136,785 73	144,018 71
Arkansas.....	2	15,297 04	2	4,409 07	19,706 11
Kentucky.....	30	231,871 47	32	145,860 62	377,732 09
Louisville.....	8	57,120 44	8	184,594 91	241,715 35
Tennessee.....	18	38,651 83	19	85,939 52	124,591 35
Ohio.....	101	490,395 44	97	430,594 57	920,990 01
Cincinnati.....	3	50,869 56	4	45,297 04	96,166 60
Cleveland.....	5	08,418 54	6	85,689 36	154,107 90
Indiana.....	57	295,417 17	59	534,523 79	829,940 96
Illinois.....	79	406,286 05	79	257,646 75	723,932 80
Chicago.....	8	153,296 24	8	140,185 23	293,481 47
Michigan.....	57	175,849 41	52	245,081 99	420,931 40
Detroit.....	4	83,908 36	4	14,832 27	98,740 63
Wisconsin.....	12	20,723 59	16	50,801 50	71,525 09
Milwaukee.....	3	38,568 11	3	25,744 91	64,313 02
Iowa.....	43	125,870 78	45	116,748 20	242,618 98
Minnesota.....	24	99,821 96	23	96,841 75	196,663 71
Missouri.....	11	32,261 99	10	30,311 86	62,573 85
Saint Louis.....	3	12,346 11	5	146,611 30	158,957 41
Kansas.....	10	29,302 49	10	58,215 78	87,518 27
Nebraska.....	10	83,121 63	7	25,454 00	58,575 63
Colorado.....	10	41,785 62	8	58,182 43	99,968 05
Oregon.....	1	12,130 04	1	4,681 41	17,012 05
California.....	5	10,517 83	5	29,153 79	39,671 62
San Francisco.....	2	70,250 91	2	39,543 30	109,794 21
New Mexico.....	2	5,808 61	2	19,590 26	25,404 87
Utah.....	1	5,023 00	0	.....	5,023 00
Montana.....	3	5,251 93	2	5,340 16	10,592 09
Wyoming.....	1	2,843 72	2	37,690 38	40,534 10
Dakota.....	2	5,721 73	3	8,975 36	9,697 09
Washington.....	1	868 81	1	291 89	1,160 70
Totals for 1879.....	1,421	10,238,324 08	1,442	11,487,930 17	21,725,655 15
Add for 1878.....	1,304	10,903,145 04	1,430	13,563,654 85	24,466,799 89
Add for 1877.....	980	8,175,960 56	1,108	11,757,627 43	19,833,587 99
Add for 1876.....	806	6,501,169 82	1,034	13,217,856 60	19,719,026 42
Aggregate losses for four years.....	.....	35,818,600 40	.....	50,028,469 05	85,845,009 45



In the following table the total losses charged off in each geographical division of the country during the last four years are shown, with the number of banks reporting the losses:

Six months ending—	New England States.		Middle States.		Southern States.		Western States and Territories.		United States.	
	No.	Amount.	No.	Amount.	No.	Amount.	No.	Amount.	No.	Amount.
March 1, 1876 .....	201	\$1,485,532	268	\$3,553,129	67	\$308,861	270	\$1,153,648	806	\$6,501,170
September 1, 1876 ..	282	3,074,128	344	7,156,349	90	896,891	318	2,090,469	1,034	13,217,857
Total, 1876 .....	.....	4,559,660	.....	10,709,478	.....	1,205,752	.....	3,244,137	.....	19,719,027
March 1, 1877 .....	269	2,465,328	314	3,462,684	80	478,252	297	1,769,697	980	8,175,961
September 1, 1877 ..	312	4,825,040	353	3,945,806	86	511,841	357	2,474,940	1,108	11,757,627
Total, 1877 .....	.....	7,290,368	.....	7,408,490	.....	990,093	.....	4,244,637	.....	19,933,588
March 1, 1878 .....	327	3,344,012	417	4,506,813	124	672,032	436	2,380,288	1,304	10,903,145
September 1, 1878 ..	399	4,016,814	449	5,502,770	140	1,225,602	442	2,818,469	1,430	13,563,655
Total, 1878 .....	.....	7,360,826	.....	10,009,583	.....	1,897,634	.....	5,198,757	.....	24,466,800
March 1, 1879 .....	379	3,612,128	459	3,592,950	125	666,646	458	2,336,000	1,421	10,238,324
September 1, 1879 ..	384	3,388,394	463	4,360,440	139	1,235,784	456	2,502,712	1,443	11,487,330
Total, 1879 .....	.....	7,000,522	.....	7,953,390	.....	1,902,430	.....	4,839,312	.....	21,725,654
Total for 4 years .....	.....	26,211,376	.....	36,080,941	.....	6,025,909	.....	17,526,843	.....	85,845,069

It will be seen from the foregoing table that the total losses charged off by the banks during the current year were \$21,725,654, that in 1878 they amounted to \$24,466,800, in 1877 to \$19,933,588, and in 1876 to \$19,719,027; making a grand aggregate of \$85,845,069 of losses which the banks have sustained during the four years named. Of the \$57,950,081 of losses charged off within the last two and a half years, \$8,639,407 was on account of depreciation in the premium on the United States bonds held by the banks. The total losses thus charged off during the last four years are more than 19 per cent. of the entire capital of the banks.

The amount of losses sustained in the several principal cities of the United States is shown in the following table:

Cities.	1876.	1877.	1878.	1879.	Total.
New York .....	\$6,873,759 87	\$4,247,941 06	\$5,147,319 98	\$3,135,557 37	\$19,404,578 98
Boston .....	1,598,722 68	2,192,053 81	2,490,197 46	2,653,390 58	8,936,364 58
Philadelphia .....	152,976 14	333,248 47	561,676 30	491,558 36	1,539,459 27
Pittsburg .....	333,851 56	280,466 59	419,036 51	333,022 99	1,375,377 65
Baltimore .....	876,207 32	200,597 74	368,915 99	294,507 00	1,740,228 05
New Orleans .....	519,701 41	286,259 47	338,496 90	272,889 87	1,417,347 65

These losses have, to a considerable extent, been charged to the current profits of the banks—that is, to the profits of the semi-annual periods in which the losses occurred. In some cases, however, where the losses were large, they have been partly met from the accumulated profits of the banks, including the legal surplus; and in extreme cases they have been met, either by assessment upon the shareholders, or by a reduction of the capital stock under section 5143 of the Revised Statutes.

It will be seen from the above that the national banks have not escaped the effects of the general depression which, since 1873, has affected all branches of trade and industry in the country, and this will still more plainly appear in the paragraphs and tables which follow, relating to surplus and dividends.

## SURPLUS.

In addition to the paid-up capital which each national bank must have, and which must be kept always unimpaired, there is also the surplus fund, which the law provides shall be accumulated by setting aside, before the usual semi-annual dividend is declared, one-tenth part of the semi-annual net profits of the bank. In course of time this legal surplus becomes working capital, in the case of many banks largely exceeding their nominal capital. The capital and surplus together form the working fund of a bank, each contributing *pro rata* to its ultimate profits; and the banks which make large dividends in proportion to their capital are those which have accumulated a large surplus, such dividends being really earned by their combined capital and surplus.

The following table shows the growth of surplus from the commencement of the system to the present time, as nearly as possible by semi-annual periods, with the increase or decrease for each period :

Dates.	Surplus.		Dates.	Surplus.	
	Amount.	Semi-annual increase or decrease.		Amount.	Semi-annual increase or decrease.
		<i>Increase.</i>			<i>Increase.</i>
July 4, 1864	\$1, 129, 910		June 10, 1872	\$105, 181, 943	\$3, 608, 789
January 2, 1865	8, 663, 311	\$7, 533, 401	December 27, 1872	111, 410, 249	6, 228, 306
July 3, 1865	31, 303, 596	22, 640, 255	June 13, 1873	116, 847, 455	5, 437, 206
January 1, 1866	43, 090, 371	11, 696, 805	December 26, 1873	120, 901, 268	4, 113, 813
July 2, 1866	50, 151, 992	7, 151, 621	June 26, 1874	126, 239, 308	5, 278, 040
January 7, 1867	59, 992, 875	9, 840, 883	December 31, 1874	130, 485, 641	4, 246, 333
July 1, 1867	63, 232, 811	3, 239, 936	June 30, 1875	133, 169, 095	2, 683, 454
January 6, 1868	70, 536, 126	7, 253, 315			<i>Decrease.</i>
July 6, 1868	75, 840, 119	5, 253, 993	December 17, 1875	133, 085, 422	\$82, 673
January 4, 1869	81, 169, 937	5, 329, 818	June 30, 1876	131, 897, 197	1, 183, 225
June 12, 1869	82, 218, 576	1, 048, 639	December 22, 1876	131, 390, 665	506, 532
January 22, 1870	90, 174, 281	7, 955, 705	June 22, 1877	124, 714, 073	6, 676, 592
June 9, 1870	91, 689, 834	1, 515, 553	December 28, 1877	121, 568, 455	3, 145, 618
December 28, 1870	94, 705, 740	3, 015, 906	June 29, 1878	118, 178, 531	3, 389, 924
June 10, 1871	98, 322, 204	3, 616, 464	January 1, 1879	116, 209, 864	1, 977, 667
December 10, 1871	101, 573, 154	3, 250, 950	June 14, 1879	114, 321, 376	1, 879, 488

The total surplus fund, which up to June, 1875, had from the beginning shown a constant increase, during the six months next following first began to show a decrease; while each semi-annual period since the latter date has exhibited a still diminishing surplus, thus in some measure indicating how severely the national banks have felt the business inactivity and depression of the past six years.

## DIVIDENDS.

Since the year 1869 the banks have been required to make semi-annual reports of their dividends and earnings. From these reports tables have been prepared showing the profits and dividends of all the national banks. The latter must, to afford a fair view of the subject, be considered in their relation, not alone to capital, but to capital and surplus combined; since, in reality, the latter contributes proportionately as much to the semi-annual profits from which the dividends are derived as does the former.

In the appendix is given a table which shows in a concise form the ratio of dividends to capital, and of dividends to the united capital and surplus, and also the ratio of the total net earnings to capital and surplus, of the national banks in each State and principal city in the Union, for each half-year from March 1, 1875, to September 1, 1879.

The following table shows the capital, surplus, dividends, and total earnings of all the national banks, for each half-year from March 1, 1869, to September 1, 1879, together with the ratio of dividends and earnings to capital, and to combined capital and surplus:

Period of six months ending—	No. of banks.	Capital.	Surplus.	Total dividends.	Total net earnings.	RATIOS.		
						Divi- dends to capital.	Dividends to capital and sur- plus.	Earnings to capital and sur- plus.
						Per cent.	Per cent.	Per cent.
Sept. 1, 1869	1,481	\$401,070,802	\$82,105,848	\$21,767,831	\$29,221,184	5.42	4.70	6.04
Mar. 1, 1870	1,571	416,366,981	86,118,210	21,479,095	28,960,934	5.16	4.27	5.77
Sept. 1, 1870	1,601	425,317,104	91,630,020	21,080,343	26,813,885	4.96	4.08	5.19
Mar. 1, 1871	1,605	428,039,165	94,672,401	22,205,150	27,243,162	5.18	4.24	5.21
Sept. 1, 1871	1,633	445,999,264	98,286,591	22,125,279	27,315,311	4.96	4.07	5.02
Mar. 1, 1872	1,759	459,630,706	99,431,243	22,859,826	27,502,339	5.07	4.16	5.00
Sept. 1, 1872	1,832	465,676,023	105,181,942	23,857,289	30,572,881	5.12	4.17	5.36
Mar. 1, 1873	1,912	475,918,683	114,257,288	24,826,061	31,926,478	5.22	4.21	5.41
Sept. 1, 1873	1,953	488,110,951	118,113,848	24,853,029	33,122,000	5.09	4.09	5.46
Mar. 1, 1874	1,967	489,510,323	123,409,859	25,829,958	30,544,120	4.81	3.84	4.82
Sept. 1, 1874	1,971	489,938,284	125,564,039	24,929,307	30,036,811	5.09	4.03	4.86
Mar. 1, 1875	1,967	485,568,831	131,560,037	24,750,816	29,130,007	5.01	3.96	4.63
Sept. 1, 1875	2,047	497,864,833	134,123,649	24,317,785	28,800,217	4.88	3.85	4.76
Mar. 1, 1876	2,076	504,299,491	134,467,593	24,811,581	28,067,921	4.92	3.88	4.63
Sept. 1, 1876	2,081	509,482,271	132,251,078	22,563,829	29,546,231	4.50	3.57	3.25
Mar. 1, 1877	2,080	496,651,580	130,872,165	21,803,969	19,592,062	4.39	3.47	3.12
Sept. 1, 1877	2,072	486,324,860	124,549,254	22,117,116	15,274,028	4.54	3.02	2.59
Mar. 1, 1878	2,074	475,609,751	122,373,561	18,982,390	16,346,696	3.99	3.17	2.83
Sept. 1, 1878	2,047	470,231,898	118,087,134	17,959,223	15,638,893	3.81	3.04	2.51
Mar. 1, 1879	2,043	464,413,996	116,744,135	17,541,654	14,678,690	3.78	3.02	2.53
Sept. 1, 1879	2,045	455,132,056	115,149,351	17,401,807	16,875,200	3.82	3.05	2.80

This table shows that there has been a steady falling off in the rate of earnings since 1870. In that year the ratio of dividends to capital was 10.12 per cent. while this year it is but 7.60 per cent. In the former year the ratio of dividends to capital and surplus was 8.35 per cent. while now it is 6.07 per cent. only; and since the date mentioned the ratio of earnings to capital and surplus has fallen from 10.96 per cent. to 5.49 per cent.

This marked decline is directly attributable to the losses sustained by the banks, in consequence of which many of them have declared no dividends at all, while others, though declaring dividends, have reduced them to a rate far below the average legal rates of interest.

The following tabular statement shows by geographical divisions the number of national banks, with their capital, which have paid no dividends to their stockholders during the semi-annual periods of 1878 and 1879 respectively, together with the totals of each semi-annual period for the three preceding years:

Geographical divisions.	Six months ending—				Average for the year.	
	March 1, 1879.		September 1, 1879.			
	No. of banks.	Capital.	No. of banks.	Capital.	No. of banks.	Capital.
New England States .....	46	\$16, 135, 700	42	\$15, 020, 000	44	\$15, 577, 850
Middle States .....	99	17, 894, 000	91	12, 920, 300	95	15, 362, 150
Southern States .....	32	5, 751, 000	41	5, 254, 000	37	5, 502, 600
Western States and Territories .....	132	14, 133, 000	125	11, 382, 000	128	12, 767, 500
Totals for 1879 .....	309	53, 843, 700	299	44, 570, 300	304	49, 210, 000
Totals for 1878 .....	328	48, 797, 000	357	58, 730, 950	343	53, 767, 425
Totals for 1877 .....	245	40, 452, 000	288	41, 166, 200	266	40, 809, 100
Totals for 1876 .....	235	34, 290, 320	273	44, 057, 725	254	39, 174, 022
Average for four years .....	279	44, 345, 930	304	47, 134, 294	292	45, 740, 137

The number of banks passing dividends in the first dividend period of 1879 was 309, with a total capital of \$53,843,700; in the second period the number was 299, with a capital of \$44,576,300; while during the last four years the average number of banks semi-annually passing dividends on account of losses has been 292. The average amount of capital upon which no dividends have been paid during that time is \$45,740,137; from which it follows that for a continuous period of four years about one-seventh of the whole number of banks in operation have paid no dividends, and that more than one-tenth of the total capital has been unremunerative.

The percentage to capital of dividends paid, and of dividends and earnings to combined capital and surplus, is given by similar divisions in the following table, for the years 1877, 1878, and 1879:

Geographical divisions.	1877.			1878.			1879.		
	Divi- dends to capital.	Divi- dends to capital and sur- plus.	Earnings to capital and sur- plus.	Divi- dends to capital.	Divi- dends to capital and sur- plus.	Earnings to capital and sur- plus.	Divi- dends to capital.	Divi- dends to capital and sur- plus.	Earnings to capital and sur- plus.
	Per ct.	Per ct.	Per ct.	Per ct.	Per ct.	Per ct.	Per ct.	Per ct.	Per ct.
New England States .....	7.6	6.0	4.7	6.9	5.5	4.3	6.4	5.2	4.2
Middle States ..	8.5	6.6	5.4	7.9	6.1	4.9	7.9	6.1	5.8
Southern States ..	8.3	7.1	7.1	7.3	6.2	5.7	7.0	6.0	5.4
Western States and Territories .....	12.2	9.6	7.2	9.6	7.8	6.9	9.4	7.5	7.1
United States ..	8.9	7.1	5.6	7.8	6.2	5.1	7.6	6.1	5.5

The three subjects of losses, surplus, and dividends are, it will be perceived, intimately connected one with another. The large losses, the depleted surplus, and the diminished dividends of the national banks all point to the conclusion that these institutions cannot longer continue to pay the heavy rates of taxation imposed upon them alike by the States and by the General Government, and at the same time adequately remunerate their shareholders for the use of their capital.

#### TAXATION.

The Comptroller respectfully calls the attention of Congress to the subject of taxation of the circulation, capital and deposits of the national banks, and again recommends the repeal of the tax upon their capital and deposits. The reasons which induce this recommendation are given at length in his report for 1877. It is important to be considered that this tax originated as a war measure. At the time it was imposed it was deemed expedient, in order to meet an extraordinary emergency, to lay even the necessities of life under contribution to sustain the government. All taxes thus imposed upon these necessities have since then been repealed, and the internal revenue of the government, with the exception of that arising from the tax on banking capital and deposits, is now derived from imposts on spirits, tobacco, matches, patent medicines and fermented liquors. Even the tax on tea and coffee, which are admitted luxuries, has been removed. Banking capital, one of the necessities of trade and commerce, is thus put on a footing with what are generally considered the least indispensable luxuries.

Table of Taxes, &amp;c.—Continued.

States and Territories.	Capital.	Amount of taxes.			Ratios to capital.		
		United States.	State.	Total.	U. S.	State.	Total.
Ohio.....	\$18,903,637	\$254,030	\$399,062	\$644,092	1.3	2.1	3.4
Cincinnati.....	4,333,333	65,684	120,833	186,516	1.5	3.7	4.2
Cleveland.....	4,289,130	46,252	80,779	133,031	1.1	2.0	3.1
Indiana.....	15,381,544	104,104	316,918	511,022	1.3	2.1	3.4
Illinois.....	11,319,200	157,543	210,086	368,529	1.4	2.0	3.4
Chicago.....	4,770,166	118,637	106,157	224,794	2.5	2.6	5.1
Michigan.....	7,561,740	90,915	113,231	204,146	1.2	1.5	2.7
Detroit.....	2,100,000	35,105	31,099	66,204	1.7	1.5	3.2
Wisconsin.....	2,690,000	40,748	49,003	90,651	1.5	2.0	3.5
Milwaukee.....	650,000	16,556	17,144	32,700	2.4	2.6	5.0
Iowa.....	6,048,704	81,949	115,594	197,543	1.4	2.1	3.5
Minnesota.....	4,793,131	62,850	92,720	155,570	1.3	2.0	3.3
Missouri.....	1,725,817	24,512	31,987	56,499	1.4	2.5	3.9
Saint Louis.....	2,653,750	44,014	62,748	106,762	1.6	2.4	4.0
Kansas.....	952,320	15,238	21,131	36,369	1.6	2.6	4.2
Nebraska.....	950,000	21,690	23,706	45,396	2.3	2.6	4.9
Colorado.....	1,003,750	24,002	23,166	47,168	2.4	2.4	4.8
Oregon.....	250,000	7,710	2,025	10,635	3.1	1.2	4.3
California*.....	1,550,000	18,547	3,696	22,243	1.2	0.3	1.5
San Francisco*.....	2,750,000	22,570	160	22,730	0.8	0.0	0.8
New Mexico.....	300,000	4,280	5,243	9,523	1.4	1.8	3.2
Utah.....	200,000	2,803	2,750	5,553	1.4	1.4	2.8
Idaho.....	160,000	1,396	3,147	4,543	1.4	3.2	4.6
Montana.....	332,880	6,637	4,588	11,225	2.0	3.1	5.1
Wyoming.....	125,000	2,188	2,636	4,824	1.8	2.1	3.9
Dakota.....	129,124	2,363	672	3,035	1.8	1.3	3.1
Washington.....	111,671	699	699	699	0.6	0.0	0.6
Western States and Territories.....	95,974,897	1,362,082	1,839,929	3,202,011	1.4	2.0	3.4
Totals.....	471,064,238	6,727,292	8,056,533	14,783,765	1.4	1.7	3.1

\* California banks pay no State taxes on capital, except such as is invested in real estate.

It is to be regretted that it has not been possible to obtain the data from which to prepare a table similar to the above, showing the United States and State taxes paid by banks other than national, with their capital and the percentage of tax to capital. In the following table, however, the taxes paid annually to the Commissioner of Internal Revenue by banks other than national, on circulation, on deposits, and on capital, are given from 1864 to 1879:

Years.	On circulation.	On deposits.	On capital.	Totals.
1864.....	\$2,056,996 30	\$780,723 52	.....	\$2,837,719 82
1865.....	1,993,661 84	2,043,841 08	\$908,367 98	4,946,870 90
1866.....	990,278 11	2,090,035 83	374,074 11	3,463,988 05
1867.....	214,998 75	1,355,395 98	476,867 73	2,046,562 46
1868.....	28,639 88	1,438,512 77	399,562 00	1,866,745 55
1869.....	16,565 05	1,734,417 63	445,071 49	2,196,054 17
1870.....	15,419 94	2,177,576 46	827,087 21	3,020,083 61
1871.....	22,781 02	2,702,196 84	919,262 77	3,644,241 53
1872.....	8,919 82	3,643,251 71	976,057 61	4,628,229 14
1873.....	24,778 62	3,000,302 79	736,039 05	3,771,031 46
1874.....	16,738 26	2,453,544 26	916,878 15	3,387,160 67
1875.....	22,746 27	2,072,280 27	1,102,241 58	4,007,248 12
1876.....	17,947 67	2,000,530 75	989,219 61	4,006,698 03
1877.....	5,430 16	2,896,617 59	927,061 24	3,829,729 33
1878.....	1,118 72	2,503,687 50	897,225 84	3,402,631 85
1879.....	13,963 29	2,354,911 74	830,638 56	3,198,883 59
Aggregates.....	5,450,254 60	37,255,426 85	11,721,590 83	54,427,278 28

The rate of taxation imposed on the deposits and capital of State banks and private bankers is precisely the same as that imposed upon national banks. The tax upon their circulation consists chiefly of penalties imposed for its unauthorized issue.

In comparison with the foregoing is placed the following table, showing the taxes paid to the United States by the national banks during the same years:

Years.	On circulation.	On deposits.	On capital.	Totals.
1864.....	\$53,193 32	\$85,911 87	\$18,432 07	\$167,537 26
1865.....	733,247 50	1,087,530 86	133,251 15	1,954,029 60
1866.....	2,106,785 30	2,633,102 77	406,047 74	5,146,835 81
1867.....	2,868,636 78	2,650,180 09	321,881 36	5,840,698 23
1868.....	2,046,343 07	2,564,143 44	306,781 67	5,817,268 18
1869.....	2,057,416 73	2,614,533 58	312,918 68	5,884,868 99
1870.....	2,049,744 13	2,614,767 61	375,962 26	5,940,474 00
1871.....	2,087,021 69	2,802,840 55	385,292 13	6,175,154 67
1872.....	3,193,570 03	3,120,964 37	380,356 27	6,703,910 67
1873.....	3,353,180 13	3,196,569 29	454,891 51	7,004,640 93
1874.....	3,404,483 11	3,209,967 72	469,048 02	7,083,498 85
1875.....	3,283,450 89	3,514,265 39	507,417 76	7,305,134 04
1876.....	3,091,795 76	3,505,129 64	632,296 16	7,229,221 56
1877.....	2,900,957 53	3,451,965 38	660,784 90	7,018,707 81
1878.....	2,948,047 08	3,273,111 74	500,306 83	6,781,455 65
1879.....	3,000,647 16	3,300,666 90	401,020 61	6,721,236 67
Aggregates.....	42,787,526 30	43,644,693 50	6,337,479 12	92,769,698 92

The taxes above shown are those paid under the laws now in force, requiring the national banks to pay semi-annually to the Treasurer of the United States a duty of one-half of one per cent. on the average amount of their circulating-notes outstanding, one-quarter of one per cent. upon the average amount of their deposits, and a like duty upon their capital in excess of the amount invested in United States bonds. It will be seen that the national banks have contributed more than two-thirds of the whole amount of the taxes paid by the banks and bankers of the country, while the cost to the government of the national system since its inauguration in 1863, including the engraving of plates and the printing of circulating-notes, has been but \$4,732,731.

From tables similar to the one first given herein for 1878, showing the amounts of national and State taxes paid by the national banks, the following condensed table has been prepared, which shows the taxes, national and State, paid by the national banks during each year from 1866 to 1878 inclusive. The taxes shown for 1866, 1867, and 1869, and for the years 1874 to 1878, inclusive, are from complete data obtained by this Office, while those given for the year 1868, and from 1870 to 1873, inclusive, are estimated. In the returns of the United States taxes paid prior to 1872, the special or license tax of two dollars on each one thousand dollars of capital, and the income tax on net earnings, are included:

Years.	Capital stock.	Amount of taxes.			Ratio of tax to capital.		
		United States.	State.	Total.	United States.	State.	Total.
					Per ct.	Per ct.	Per ct.
1866.....	\$410,593,435	\$7,949,451	\$4,069,938	\$16,019,389	1.9	2.0	3.9
1867.....	422,804,666	9,525,007	8,813,127	18,338,134	2.2	2.1	4.3
1868.....	420,143,491	9,465,692	8,757,656	18,223,348	2.2	2.1	4.3
1869.....	419,619,860	10,081,244	7,297,096	17,378,340	2.4	1.7	4.1
1870.....	429,314,041	10,190,682	7,465,675	17,656,357	2.4	1.7	4.1
1871.....	451,594,123	10,649,895	7,860,678	18,510,573	2.4	1.7	4.1
1872.....	472,956,958	6,703,010	8,343,772	15,046,782	1.4	1.8	3.2
1873.....	488,778,418	7,094,646	8,499,748	15,594,394	1.4	1.8	3.2
1874.....	493,751,679	7,256,083	9,620,326	16,876,409	1.5	2.0	3.5
1875.....	503,687,911	7,317,531	10,058,122	17,375,653	1.5	2.0	3.5
1876.....	501,788,679	7,676,087	9,701,732	16,777,819	1.4	2.0	3.4
1877.....	485,250,694	6,902,573	8,829,304	15,731,877	1.4	1.9	3.3
1878.....	471,064,238	6,727,232	8,056,693	14,783,925	1.4	1.7	3.

In order that it may be seen how unequally these United States and State taxes bear on the national banks in different sections of the country, the following tables have been prepared, giving, for the years from 1874 to 1878 inclusive, the capital stock invested, and the percentage thereon of taxes paid, in each of the four geographical divisions of the country:

1874.

Geographical divisions.	Capital.*	Amount of taxes.			Ratios to capital.		
		U. S.	State.	Total.	U. S.	State.	Total.
					<i>Per ct.</i>	<i>Per ct.</i>	<i>Per ct.</i>
New England States.....	\$160,517,266	\$1,696,533	\$2,980,484	\$4,877,017	1.2	1.8	3.0
Middle States.....	190,162,129	3,325,425	3,011,371	7,236,796	1.7	2.1	3.8
Southern States.....	33,558,483	436,540	517,782	954,322	1.3	1.5	2.8
Western States and Terr's.	106,513,801	1,597,585	2,210,679	3,808,264	1.5	2.0	3.5
United States.....	493,751,679	7,256,083	9,620,326	16,876,409	1.5	2.0	3.5

1875.

New England States.....	\$164,316,333	\$1,937,016	\$3,016,537	\$4,953,553	1.2	1.8	3.0
Middle States.....	193,585,507	3,300,498	4,062,450	7,362,957	1.7	2.1	3.8
Southern States.....	34,485,483	445,048	476,236	921,284	1.3	1.4	2.7
Western States and Terr's.	111,300,588	1,634,969	2,502,890	4,137,859	1.5	2.4	3.9
United States.....	503,687,911	7,317,531	10,058,123	17,375,653	1.5	2.0	3.5

1876.

New England States.....	\$168,068,379	\$1,947,970	\$2,014,808	\$4,862,778	1.2	1.7	2.8
Middle States.....	192,163,773	3,190,247	4,025,316	7,215,563	1.7	2.2	3.9
Southern States.....	33,430,193	423,781	431,164	854,945	1.3	1.3	2.6
Western States and Terr's.	108,116,734	1,514,089	2,330,444	3,844,533	1.4	2.3	3.7
United States.....	501,788,079	7,076,087	9,701,732	16,777,819	1.4	2.0	3.4

1877.

New England States.....	\$167,788,475	\$1,907,776	\$2,864,119	\$4,771,895	1.1	1.7	2.8
Middle States.....	182,885,502	3,129,990	3,544,862	6,674,852	1.7	1.9	3.6
Southern States.....	32,212,288	411,486	429,149	840,635	1.3	1.4	2.7
Western States and Terr's.	102,364,369	1,453,321	1,991,174	3,444,495	1.4	2.1	3.5
United States.....	485,250,694	6,902,573	8,829,304	15,731,877	1.4	1.9	3.3

1878.

New England States.....	\$166,737,594	\$1,900,735	\$2,593,043	\$4,493,778	1.1	1.6	2.7
Middle States.....	176,768,899	3,054,576	3,217,475	6,272,061	1.7	1.8	3.5
Southern States.....	31,583,348	409,839	460,086	815,915	1.3	1.3	2.6
Western States and Terr's.	95,974,897	1,362,082	1,839,929	3,202,011	1.4	2.0	3.4
United States.....	471,064,238	6,727,232	8,056,533	14,783,765	1.4	1.7	3.1

\* The capital of the banks which reported State taxes in 1874 was \$476,836,031; in 1875, \$493,738,408; in 1876, \$488,272,782; in 1877, \$474,067,771, and in 1878, \$463,983,724.

This table shows that the heaviest taxes are paid in the Western and Middle States, and the lightest in the Southern and Eastern. The table below shows for three different years the great inequality in the rates of State taxation paid in the principal cities of the country:

Cities.	Rates of taxation.								
	1876.			1877.			1878.		
	United States.	State.	Total.	United States.	State.	Total.	United States.	State.	Total.
	Per cent	Per cent	Per cent	Per cent	Per cent	Per cent	Per cent	Per cent	Per cent
Boston .....	1.4	1.6	3.0	1.3	1.6	2.9	1.3	1.3	2.6
New York .....	1.9	3.5	5.4	2.1	2.9	5.0	2.2	2.9	5.1
Albany .....	3.2	3.4	6.6	3.0	3.2	6.2	2.8	2.8	5.6
Philadelphia .....	2.1	0.7	2.8	2.1	0.7	2.8	2.0	0.7	2.7
Pittsburgh .....	1.4	0.5	1.9	1.4	0.5	1.9	1.3	0.5	1.8
Baltimore .....	1.2	2.0	3.2	1.2	1.9	3.1	1.2	1.8	3.0
Washington .....	1.2	1.1	2.3	1.3	0.7	2.0	1.4	0.6	2.0
New Orleans .....	1.6	0.2	1.8	1.5	0.9	2.4	1.5	1.0	2.5
Louisville .....	1.4	0.5	1.9	1.4	0.5	1.9	1.4	0.5	1.9
Cincinnati .....	1.7	2.9	4.6	1.7	2.9	4.6	1.5	2.7	4.2
Cleveland .....	1.1	2.5	3.6	1.1	2.2	3.3	1.1	2.0	3.1
Chicago .....	2.2	3.0	5.2	2.2	2.9	5.1	2.5	2.6	5.1
Detroit .....	1.6	1.5	3.1	1.6	1.7	3.3	1.7	1.5	3.2
Milwaukee .....	2.2	2.9	5.1	2.4	2.6	5.0	2.4	2.6	5.0
Saint Louis .....	1.3	2.6	3.9	1.4	2.5	3.9	1.6	2.4	4.0
Saint Paul .....	1.2	1.8	3.0	1.3	1.7	3.0	1.3	1.5	2.8

The States in which the rates of State taxation were most excessive during the years 1876, 1877, and 1878 are shown in the table below:

States.	1876.			1877.			1878.		
	U. S.	State.	Total.	U. S.	State.	Total.	U. S.	State.	Total.
	Per cent	Per cent	Per cent	Per cent	Per cent	Per cent	Per cent	Per cent	Per cent
	Per cent	Per cent	Per cent	Per cent	Per cent	Per cent	Per cent	Per cent	Per cent
New York .....	1.8	3.1	4.9	1.9	2.7	4.6	2.0	2.6	4.6
New Jersey .....	1.4	2.1	3.5	1.4	1.9	3.3	1.4	1.8	3.2
Ohio .....	1.3	2.7	4.0	1.4	2.4	3.8	1.3	2.2	3.5
Indiana .....	1.2	2.5	3.7	1.2	2.3	3.5	1.3	2.1	3.4
Illinois .....	1.8	2.4	4.2	1.7	2.2	3.9	1.7	2.1	3.8
Wisconsin .....	1.7	2.1	3.8	1.7	2.1	3.8	1.7	2.2	3.9
Kansas .....	1.5	3.0	4.5	1.7	2.6	4.3	1.6	2.6	4.2
Nebraska .....	2.2	2.5	4.7	2.3	2.3	4.6	2.3	2.6	4.9
South Carolina .....	1.0	2.7	3.7	1.0	2.6	3.6	1.0	2.1	3.1
Tennessee .....	1.4	2.1	3.5	1.6	2.2	3.8	1.6	2.1	3.7

In the foregoing tables there appears to be an inequality in national as well as State taxation; but this inequality is seeming only, and arises from the fact that while the rate of tax imposed on circulation, deposits, and capital is uniform as to all banks and in all sections of the country, yet in the tables there is given the percentage of the total tax to the capital only. Therefore, in those States where the deposits and circulation are large in proportion to capital, the percentage appears greater. In States where the deposits and circulation are proportionately smaller, the percentage appears less. But in the case of State taxation the inequality is a real one, as the whole taxes are laid directly on the shares of capital stock alone. These heavy impost rates of necessity compel national and other banks and bankers to raise their rates of discount, in order to be able both to pay the tax and to make a reasonable return to their stockholders for the use of their capital; and this increased rate



of discount must be and is largely paid by the producers and active business men of the country, who are the customers of the banks.

For the past twelve years, upon an average combined capital and surplus of \$588,554,173, the average annual net earnings of the national banks, including the amount paid in taxes, have been \$68,078,144. Of this latter sum \$16,953,578, or about one quarter, have been annually paid in taxes, national and State, and about \$45,443,564 have been annually paid in dividends. Of the \$16,953,578 paid annually in taxes of all kinds, \$3,239,999 have been paid to the United States under the law taxing deposits and capital, the repeal of which the Comptroller earnestly recommends. These taxes amount to nearly one per cent. of the average capital, and its repeal would undoubtedly, in the case of the country banks at least, have an appreciable effect in lowering the rate of discount.

#### RESERVE.

The following table exhibits the amount of net deposits, and the reserve required thereon by the act of June 20, 1874, together with the amount and classification of reserve held by the national banks in New York City, in the other reserve cities, and by the remaining banks at the date of their reports in October of each year from 1875 to 1879

#### NEW YORK CITY.

	Number of banks	Net deposits.	Reserve required.	Reserve held.		Classification of reserve.			
				Amount.	Ratio to deposits.	Specie.	Other lawful money.	Due from agents.	Redemption fund.
		Millions.	Millions.	Millions.	Per cent.	Millions.	Millions.	Millions.	Millions.
October 1, 1875	48	202.3	50.6	60.5	29.9	5.0	54.4	.....	.....
October 2, 1876	47	197.9	49.5	60.7	30.7	14.6	45.3	.....	.....
October 1, 1877	47	174.9	43.7	48.1	27.5	13.0	34.3	.....	.....
October 1, 1878	47	180.8	47.4	50.9	28.8	13.3	36.5	.....	.....
October 2, 1879	47	210.2	52.6	53.1	25.3	19.4	32.6	.....	.....

#### OTHER RESERVE CITIES.

October 1, 1875	188	223.9	56.0	74.5	33.3	1.5	37.1	32.3	.....
October 2, 1876	189	217.0	54.2	76.1	35.1	4.0	37.1	32.0	.....
October 1, 1877	188	204.1	51.0	67.3	33.0	5.6	34.3	24.4	.....
October 1, 1878	184	190.9	50.0	71.1	35.6	9.4	29.4	29.1	.....
October 2, 1879	181	228.8	57.2	83.5	36.5	11.3	33.0	35.7	.....

#### STATES AND TERRITORIES.

October 1, 1875	1,851	307.9	46.3	100.1	32.5	1.6	33.7	53.3	1
October 2, 1876	1,853	291.7	43.8	99.9	34.3	2.7	31.0	55.4	1
October 1, 1877	1,845	290.1	43.6	95.4	32.9	4.2	31.6	48.9	1
October 1, 1878	1,822	289.1	43.4	106.1	36.7	8.0	31.1	56.0	1
October 2, 1879	1,820	329.9	49.5	124.3	37.7	11.5	30.3	71.3	1

#### SUMMARY.

October 1, 1875	2,087	734.1	152.2	235.1	32.0	8.1	125.2	85.6	1
October 2, 1876	2,089	706.6	147.5	236.7	33.5	21.3	113.4	87.4	1
October 1, 1877	2,080	669.1	138.3	210.8	31.5	22.8	100.2	78.3	1
October 1, 1878	2,053	678.8	140.8	228.1	33.6	30.7	97.0	85.1	1
October 2, 1879	2,048	768.9	159.3	260.9	33.9	42.2	95.9	107.0	1

It will be seen from the above table that the reserve held by the banks in the city of New York on October 2 last was much less in proportion

to their liabilities than it had been at a corresponding date in any of the four preceding years.

The following table, compiled from returns made to the Clearing House by the national banks in New York City, exhibits the movements of their lawful-money reserve, weekly, during the month of October, for the last seven years:

Week ending—	Specie.	Legal-tenders.	Total.	Ratio of reserve to—	
				Circulation and deposits.	Deposits.
				Per cent.	Per cent.
October 4, 1873.....	\$9,240,300	\$9,251,000	\$18,492,200	11.6	14.0
October 11, 1873.....	10,506,000	8,049,300	18,556,200	11.6	14.1
October 18, 1873.....	11,050,100	5,179,800	16,229,900	10.7	13.0
October 25, 1873.....	11,433,500	7,187,300	18,620,800	12.2	14.8
October 3, 1874.....	15,373,400	53,297,600	68,671,000	30.0	33.9
October 10, 1874.....	14,517,700	52,152,000	66,669,700	20.6	31.3
October 17, 1874.....	12,691,400	51,855,100	64,546,500	29.0	32.7
October 24, 1874.....	11,457,900	49,893,900	61,351,800	28.8	31.7
October 31, 1874.....	10,324,900	50,773,000	61,097,900	27.9	31.6
October 2, 1875.....	5,438,900	56,181,500	61,620,400	28.1	30.6
October 9, 1875.....	5,716,200	51,342,300	57,058,500	26.5	28.9
October 16, 1875.....	5,528,500	48,582,700	54,111,200	25.4	27.7
October 23, 1875.....	5,735,000	47,300,800	53,035,800	25.3	27.7
October 30, 1875.....	8,975,600	45,702,800	54,738,400	26.5	29.0
October 7, 1876.....	17,682,000	45,585,000	63,218,200	30.5	32.4
October 14, 1876.....	16,237,600	43,004,000	59,238,200	28.8	31.1
October 21, 1876.....	15,577,500	41,421,700	56,999,200	27.8	30.0
October 28, 1876.....	14,011,000	41,645,600	55,657,200	23.0	30.3
October 5, 1877.....	14,065,000	36,168,300	50,833,900	27.0	29.5
October 12, 1877.....	14,726,500	35,178,900	49,905,400	26.7	29.2
October 19, 1877.....	14,087,400	35,101,700	49,189,100	26.5	29.0
October 26, 1877.....	15,200,000	34,367,800	49,576,800	26.8	29.4
October 5, 1878.....	14,095,800	38,304,000	53,399,700	25.7	28.4
October 12, 1878.....	12,184,000	37,685,100	49,869,700	24.4	27.0
October 19, 1878.....	13,501,400	36,576,000	50,107,400	24.7	27.3
October 26, 1878.....	17,384,200	35,690,500	53,074,700	25.8	28.5
October 4, 1879.....	18,979,000	34,398,000	53,377,000	23.3	25.8
October 11, 1879.....	20,901,800	32,820,300	53,722,100	23.4	25.9
October 18, 1879.....	24,680,500	29,305,200	53,931,700	23.5	26.1
October 25, 1879.....	25,636,000	26,713,900	52,349,900	23.0	25.5

From the above table it appears that while the national banks, in October last, held the amount of reserve required by law, the proportion of their reserve to their liabilities was much less during that month than it has been at any time since 1873.

The returns of the banks to the Clearing House for the week ending October 25 last, showed that the reserve of a considerable number of them was below the requirements of the law. Letters were at once addressed to these banks, directing them to increase their reserve to the necessary amount. Replies were received showing that the deficiency of reserve was in many cases but temporary. Other banks still showed a deficiency during the week following. These delinquent banks were again notified, and the returns for the week ended November 22, show that the specie had increased \$27,633,032 since October 2, which, notwithstanding the fact that the legal-tender notes had decreased in the same time \$16,578,284, made a net increase of \$11,054,748 in the reserve funds.

A table showing the average weekly deposits, circulation and reserve of the national banks in New York City, for the months of September and October since 1872, will be found in the appendix.

Tables will also be found in the appendix exhibiting the state of the lawful-money reserve of the national banks, as shown by their reports from September 12, 1873, to October 2, 1879, together with a table showing the reserves by States and principal cities for October 2, 1879.

## NATIONAL-BANK CIRCULATION.

A table exhibiting by States and geographical divisions the number of banks organized and in operation, with their capital, bonds on deposit, and circulation issued, redeemed, and outstanding, on November 1, 1879, will be found in the appendix.

The act of February 25, 1863, and the subsequent act of June 3, 1864, authorized the issue of 300 millions of dollars of national-bank circulation, which was increased by the act of July 12, 1870, to 354 millions. The act of June 20, 1874, authorized any national bank desiring to withdraw its circulating notes, in whole or in part, to deposit lawful money with the Treasurer of the United States in sums of not less than nine thousand dollars, and to withdraw a proportionate amount of bonds held as security for such notes; and the act of June 14, 1875, repealed all previous provisions restricting the aggregate amount of national-bank circulation, and required the Secretary of the Treasury to retire legal-tender notes to an amount equal to eighty per cent. of the national-bank notes thereafter issued, until the amount of such legal-tender notes outstanding should be 300 millions and no more. That provision of the act which required a reduction of United States legal-tender notes was, however, repealed by the act of May 31, 1878. Subsequent to the passage of the act of June 20, 1874, and that of January 14, 1875, which latter act authorized the retirement and reissue of national-bank notes at the pleasure of the banks, the circulation steadily decreased in volume until the year 1877, the total decrease in this interval being \$30,869,655. During the year ending November 1, 1878, there was an increase of \$4,216,684, and during the year ending November 1, 1879, a further increase of \$14,742,503, as will be seen from the following table, which exhibits the total outstanding circulation, not including mutilated notes in transit, on the 1st day of November of each year for the last thirteen years, and also upon the dates of the acts above named :

November 1, 1867 .....	\$299, 152, 296	November 1, 1874 .....	\$351, 927, 246
November 1, 1868 .....	300, 002, 234	January 14, 1875 .....	351, 861, 459
November 1, 1869 .....	298, 910, 419	November 1, 1875 .....	345, 588, 902
November 1, 1870 .....	302, 607, 942	November 1, 1876 .....	321, 150, 718
November 1, 1871 .....	324, 810, 656	November 1, 1877 .....	315, 775, 111
November 1, 1872 .....	341, 512, 772	May 31, 1878 .....	321, 232, 099
November 1, 1873 .....	348, 382, 046	November 1, 1878 .....	320, 981, 795
June 20, 1874 .....	349, 894, 182	November 1, 1879 .....	335, 134, 504

Since the passage of the act of June 20, 1874, \$90,229,886 of legal-tender notes have been deposited in the Treasury by the national banks, for the purpose of reducing their circulation, and \$81,136,362 of bank-notes have been redeemed, destroyed, and retired.

From the date of the passage of the act of January 14, 1875, to that of the act of May 31, 1878, which prohibited the further cancellation of legal-tender notes, \$44,148,730 of additional circulation was issued, and legal-tender notes equal to eighty per cent. thereof, or \$35,318,984, was retired, leaving the amount authorized \$346,681,016, which is the amount of legal-tender notes now outstanding.

The amount of additional circulation issued for the year ending November 1, 1879, was \$22,933,490, of which \$7,494,170 was issued during the months of September and October. The amount issued to banks organized during the year was \$2,615,440; the amount retired was \$8,190,987; the actual increase for the year being \$14,742,503. During the year ending November 1, 1879, lawful money to the amount of

deposited with the Treasurer to retire circulation, of \$6,063 was deposited by banks in liquidation. The amount deposited under the act of June 20, 1874, was \$14,745,965, to which is to be added \$3,813,675 remaining from deposits made by liquidators to the passage of that act. Deducting from the above amount of circulating notes redeemed and destroyed (\$81,136,362), there remained in the hands of the Treasurer, November 1, 1879, \$12,907,199 of lawful money for the retirement of bank circulation.

The exhibits by States the issue and retirement of circulation for the year ending November 1, 1879, and the total amount of circulation June 20, 1874:

Series.	Circulation issued.	Circulation retired.		
		Under act of June 20, 1874.	Of liquidating banks.	Total.
	\$81,500	\$16,340	\$74,433	\$90,773
	6,100	42,131	9,907	58,038
	132,740	75,294	25,100	100,394
	4,895,850	419,877	31,275	450,652
	822,200	56,743	5,745	62,488
	716,890	23,580	4,987	28,567
	5,503,120	1,489,814	288,518	1,778,332
	287,000	285,170	28,547	313,717
	2,327,730	378,400	114,326	492,786
	18,000			
	574,950	228,089	5,090	233,779
	1,000	24,965	28,020	52,985
	311,400	44,250	50,500	100,750
	18,000	25,370	25,308	50,678
	458,100	130,784	16,010	152,794
	13,500	24,020		24,020
	117,920	14,038	18,731	32,769
	9,000	800	15	875
			140	140
	351,480	140,490	10,485	162,075
			4,560	4,560
	9,000	19,986	185	20,171
	967,690	110,768	46,637	157,405
	104,700	31,745	18,081	49,826
	360,210	112,053	134,197	246,250
	1,041,340	379,893	162,192	542,085
	544,900	611,426	118,549	729,975
	647,240	266,523	206,807	473,330
	884,600	134,505	47,740	182,245
	421,560	53,524	57,195	110,719
	262,600	33,810	75,178	108,988
	276,400	38,871	38,312	77,183
	109,300	5,913	67,870	73,783
	22,500	26,329	3,840	30,169
			240	240
	63,000	129	16,403	16,532
	89,900		6,884	6,884
	22,500		27,540	27,540
	27,000			
	45,000			
	90,000			
retired	297,000			1,150,590
	22,933,490	5,258,850	1,781,547	8,190,987
October 31, 1878.	55,412,570	61,092,608	13,098,357	74,095,965
on same dates.				10,218,992
from June 20, 1874.	78,340,060	66,261,458	14,874,904	92,565,944

The following table exhibits the monthly issue and retirement of national-bank notes for the year ending November 1, 1879:

Months.	National-bank circulation.		Legal-tender notes.	
	Issued.	Retired.	Deposited.	Retired.
1878.				
November .....	\$1, 219, 720	\$189, 219	\$494, 519	\$189, 219
December .....	801, 839	279, 633	908, 908	279, 633
1879.				
January .....	1, 075, 510	287, 475	1, 397, 950	287, 475
February .....	2, 078, 190	424, 428	1, 065, 000	424, 428
March .....	2, 003, 499	919, 814	1, 407, 799	919, 814
April .....	2, 957, 650	478, 746	1, 034, 287	478, 746
May .....	1, 290, 920	893, 239	500, 142	893, 239
June .....	1, 428, 480	1, 147, 294	319, 850	1, 147, 294
July .....	955, 430	674, 991	1, 844, 650	674, 991
August .....	1, 628, 130	732, 819	464, 500	732, 819
September .....	3, 912, 120	427, 017	573, 300	427, 017
October .....	3, 582, 050	594, 722	818, 600	594, 722
National-bank notes surrendered to this office and retired .....	22, 933, 490	7, 040, 397	10, 319, 398	7, 040, 397
Total .....	22, 933, 490	8, 190, 967	10, 319, 398	7, 040, 397

A table will be found in the appendix which shows, to November 1, 1878, the monthly issue and retirement of national-bank notes, and the increase or decrease in their amount, under the act of January 14, 1875.

The following table shows concisely the operations of the acts of June 20, 1874, and of January 14, 1875, from the dates of their passage to November 1, 1879:

#### NATIONAL-BANK NOTES.

Amount outstanding June 20, 1874 .....	\$349, 894, 182
Amount outstanding January 14, 1875 .....	351, 861, 450
Amount outstanding May 31, 1878 .....	322, 555, 965
Amount outstanding at date .....	335, 734, 298
Increase during the last month .....	2, 909, 178
Increase since January 1, 1879 .....	13, 411, 444
Increase since November 1, 1878 .....	14, 742, 503

#### LEGAL-TENDER NOTES.

Amount outstanding June 20, 1874 .....	\$382, 000, 000
Amount outstanding January 14, 1875 .....	382, 000, 000
Amount retired under act of January 14, 1875, to May 31, 1878 .....	35, 319, 934
Amount outstanding on and since May 31, 1878 .....	346, 681, 016
Amount on deposit with the Treasurer United States to redeem notes of insolvent and liquidating banks, and banks retiring circulation under act of June 20, 1874 .....	12, 907, 199
Decrease in deposit during the last month .....	276, 122
Increase in deposit since January 1, 1879 .....	2, 335, 434
Increase in deposit since November 1, 1878 .....	3, 279, 001

The notes of the eight national gold banks located in the State of California, which have an aggregate capital of \$4,000,000, and a circulation of \$1,447,120, are not included in the above table.

\*Circulation of national gold banks not included in the above, \$1,447,120.



## REDEMPTION.

act of June 20, 1874, provides that every national bank shall keep and have on deposit in the Treasury of the United States, lawful money of the United States, a sum equal to five per cent of the circulation, to be held and used for the redemption of the notes. Since the passage of this act the banks have, as a general rule, secured a redemption fund, and their circulating notes have been redeemed at the Treasury without expense to the government.

ble exhibits the amount of national-bank notes re-  
tion monthly by the Comptroller of the Currency, for  
November 1, 1879, and the amount received for the  
redemption agency of the Treasury, together with  
received since the passage of the act of June 20, 1874:

Received by Comptroller.				Total.	Received at redemption agency.
From national banks for reissue or surrender.	From redemption agency for reissue.	Notes of national banks in liquidation.	Under act of June 20, 1874.		
\$14, 190 20, 200	\$2, 395, 400 2, 687, 400	\$116, 716 124, 861	\$156, 909 179, 886	\$2, 682, 215 3, 022, 347	\$8, 936, 806 8, 431, 074
21, 010 71, 563 78, 740 23, 100 77, 400 25, 100 82, 380 19, 200 6, 600 13, 700	3, 017, 100 2, 898, 800 3, 004, 400 2, 973, 000 4, 437, 000 4, 542, 500 3, 047, 900 2, 704, 000 2, 014, 100 1, 638, 200	131, 585 159, 476 217, 988 110, 280 197, 060 354, 871 43, 780 179, 480 64, 030 81, 420	340, 530 555, 792 558, 090 410, 334 889, 817 848, 740 282, 423 414, 938 409, 808 267, 386	3, 510, 225 3, 685, 628 3, 859, 218 3, 516, 714 5, 601, 277 5, 771, 211 3, 456, 485 3, 317, 018 2, 404, 338 2, 000, 706	12, 160, 897 13, 083, 822 11, 869, 175 10, 346, 522 15, 690, 085 13, 898, 800 9, 123, 425 6, 314, 560 4, 508, 041 3, 349, 766
433, 180	35, 369, 800	1, 781, 547	5, 314, 653	42, 919, 182	117, 191, 999
11, 970, 045	321, 520, 055	12, 068, 365	61, 021, 708	407, 480, 238	867, 294, 293
12, 423, 225	356, 889, 855	14, 749, 912	66, 336, 423	450, 399, 415	984, 480, 292

ending November 1, 1879, there was received at the  
of the Treasury \$117,199,999 of national-bank notes,  
43,966,000, or about 38 per cent., was received from the  
rk City, and \$42,757,000, or about 37 per cent., from  
nt received from Philadelphia was \$5,041,000; from  
00; Pittsburgh, \$545,000; Cincinnati, \$1,153,000;  
00; Saint Louis, \$1,441,000; Providence, \$2,785,000.  
regulating-notes fit for circulation, returned by the  
aks of issue during the year, was \$75,284,500. The  
ived by the Comptroller for destruction, from the re-  
nd from the national banks direct, was \$41,101,830.  
\$3,762,953 were issues of banks in the city of New  
of Boston; \$1,445,400 of Philadelphia; \$1,425,423  
743,816 of Baltimore; \$631,370 of Pittsburgh; and  
er principal cities, less than \$500,000.

The following table exhibits the number and amount of national-bank notes of each denomination which have been issued and redeemed since the organization of the system, and the number and amount outstanding on November 1, 1879:

Denominations.	Number.			Amount.		
	Issued.	Redeemed.	Outstanding.	Issued.	Redeemed.	Outstanding.
Ones .....	23, 167, 677	19, 600, 477	3, 567, 200	\$23, 167, 677	\$19, 600, 477	\$3, 567, 200
Twos .....	7, 747, 519	6, 701, 270	1, 046, 249	15, 495, 038	13, 402, 540	2, 092, 498
Fives .....	65, 578, 440	45, 996, 076	19, 582, 364	327, 892, 200	229, 930, 380	97, 911, 820
Tens .....	25, 904, 223	14, 930, 599	10, 973, 624	259, 042, 230	149, 305, 990	109, 736, 240
Twenties .....	7, 889, 951	4, 237, 343	3, 652, 608	157, 309, 020	84, 746, 880	72, 552, 160
Fifties .....	1, 211, 761	785, 263	426, 498	60, 588, 050	39, 263, 150	21, 324, 900
One hundreds .....	850, 720	581, 604	269, 116	85, 072, 000	58, 160, 400	26, 911, 600
Five hundreds .....	20, 570	19, 287	1, 283	10, 285, 000	9, 643, 500	641, 500
Thousands .....	6, 340	6, 057	283	6, 340, 000	6, 057, 000	283, 000
					*—13, 586	*+13, 586
Total .....	132, 357, 201	92, 857, 976	39, 499, 225	945, 281, 215	610, 146, 711	335, 134, 504

\* Portions of notes lost or destroyed.

A table showing the number and denominations of the national-bank notes issued and redeemed, and the number of each denomination outstanding on November 1, for the last twelve years, will be found in the appendix.

The following table shows the amount of national-bank notes received at this office and destroyed yearly, since the establishment of the system:

Prior to November 1, 1865 .....	\$175, 490
During the year ending October 31, 1866 .....	1, 050, 383
During the year ending October 31, 1867 .....	3, 401, 423
During the year ending October 31, 1868 .....	4, 602, 825
During the year ending October 31, 1869 .....	8, 003, 729
During the year ending October 31, 1870 .....	14, 305, 089
During the year ending October 31, 1871 .....	24, 344, 047
During the year ending October 31, 1872 .....	30, 211, 720
During the year ending October 31, 1873 .....	36, 433, 171
During the year ending October 31, 1874 .....	49, 939, 741
During the year ending October 31, 1875 .....	137, 697, 096
During the year ending October 31, 1876 .....	98, 072, 716
During the year ending October 31, 1877 .....	76, 918, 963
During the year ending October 31, 1878 .....	57, 381, 249
During the year ending October 31, 1879 .....	41, 101, 830
Additional amount destroyed of notes of banks in liquidation .....	25, 324, 090
Total .....	610, 165, 370

#### STATE AND SAVINGS BANKS.

Section 333 of the Revised Statutes requires the Comptroller to report to Congress "a statement exhibiting under appropriate heads the resources and liabilities and condition of the banks, banking companies, and savings-banks organized under the laws of the several States and Territories, such information to be obtained from the reports made by such banks, banking companies and savings-banks to the legislatures, or officers of the different States and Territories, and where such reports cannot be obtained, the deficiency to be supplied from such other authentic sources as may be available."

The laws of the United States require returns of capital and deposit to

Commissioner of Internal Revenue, for purposes of tax-  
banks, savings-banks, and private bankers. The data  
able were obtained from the Commissioner, and com-  
This table exhibits, by geographical divisions, the  
banks and trust companies, private bankers, and sav-  
their average capital and deposits for the six months  
78:

## STATE BANKS AND TRUST COMPANIES.

Geographical divisions.	Number of banks.	Capital.	Deposits.
.....	40	\$7,100,852	\$14,303,516
.....	239	40,720,772	124,639,610
.....	251	27,426,169	32,001,456
.....	384	24,146,267	58,191,153
.....	91	27,874,655	27,243,830
.....	1,005	127,268,655	257,009,465

## PRIVATE BANKERS.

.....	70	3,725,030	3,316,206
.....	853	34,542,494	54,634,763
.....	237	5,638,564	11,891,105
.....	1,351	21,630,462	58,520,816
.....	123	4,215,951	11,654,663
.....	2,634	69,753,401	139,917,553

## SAVINGS-BANKS WITH CAPITAL.

.....	6	508,103	2,439,807
.....	3	856,673	832,046
.....	9	261,870	1,427,418
.....	11	2,592,777	31,374,489
.....	29	4,219,428	36,073,760

## SAVINGS-BANKS WITHOUT CAPITAL.

.....	426	.....	366,461,816
.....	182	.....	350,946,471
.....	3	.....	1,695,377
.....	27	.....	10,803,073
.....	6	.....	17,595,320
.....	644	.....	747,062,057

## SUMMARY.

.....	536	10,820,782	384,171,538
.....	1,280	75,771,374	532,560,551
.....	494	33,921,406	47,019,984
.....	1,771	46,038,539	128,502,460
.....	231	34,683,383	87,868,302
.....	4,312	201,241,484	1,180,122,835



The following table exhibits by States, cities, and geographical divisions the average capital and deposits of the same banks and bankers, and taxes thereon, for the same period :

States and Territories.	No. of banks.	Capital.	Deposits.	TAX.		
				On capital.	On deposits.	Total.
Maine.....	66	\$41,209	\$22,201,402	\$65 52	\$643 16	\$710 68
New Hampshire.....	71	61,000	28,786,055	152 50	2,041 34	2,193 84
Vermont.....	22	351,200	7,890,150	819 20	3,436 90	4,256 10
Massachusetts.....	164	810,000	148,785,115	1,358 70	5,149 48	6,508 18
Boston.....	57	3,357,412	61,080,908	3,573 93	17,432 42	21,006 35
Rhode Island.....	53	3,565,961	42,614,408	7,079 33	23,901 69	31,021 02
Connecticut.....	103	2,040,000	74,227,500	4,802 83	19,738 50	24,521 33
<b>New England States.....</b>	<b>536</b>	<b>10,826,782</b>	<b>284,171,538</b>	<b>17,892 01</b>	<b>72,425 49</b>	<b>90,317 50</b>
New York.....	317	9,338,629	142,418,999	16,790 91	75,556 01	92,346 92
New York City.....	459	43,037,777	250,584,151	59,323 50	232,208 78	291,527 25
Albany.....	12	641,000	12,744,636	706 02	3,619 02	4,325 04
New Jersey.....	55	1,554,540	18,073,791	2,725 00	9,078 48	11,803 48
Pennsylvania.....	280	9,328,171	23,868,082	21,540 23	58,110 99	80,651 21
Philadelphia.....	59	1,952,718	43,417,062	4,075 00	50,501 74	64,667 43
Pittsburgh.....	33	4,406,905	12,044,729	9,407 67	17,249 02	26,656 69
Delaware.....	8	640,412	1,745,570	1,545 05	1,691 70	3,236 75
Maryland.....	12	570,723	630,081	718 99	1,119 07	1,838 06
Baltimore.....	38	3,871,889	22,891,161	8,051 40	11,617 84	19,669 24
Washington.....	7	377,550	2,571,645	137 50	5,730 27	5,867 77
<b>Middle States.....</b>	<b>1,260</b>	<b>75,771,374</b>	<b>582,560,551</b>	<b>125,022 55</b>	<b>467,597 89</b>	<b>592,620 44</b>
Virginia.....	75	3,226,654	6,760,857	7,258 08	16,008 18	23,266 16
West Virginia.....	21	1,478,645	3,797,523	3,291 90	9,493 76	12,785 66
North Carolina.....	12	442,377	833,385	1,103 95	2,083 43	3,186 38
South Carolina.....	14	720,633	806,592	1,497 83	2,016 43	3,514 26
Georgia.....	60	3,937,486	4,545,928	9,644 67	10,315 17	19,959 84
Florida.....	6	81,783	215,970	204 45	539 02	743 37
Alabama.....	24	1,060,909	1,008,807	2,580 65	4,771 92	7,352 57
Mississippi.....	29	1,226,268	1,682,106	2,375 15	4,205 25	6,580 40
Louisiana.....	3	111,450	59,575	166 12	148 93	315 05
New Orleans.....	19	3,968,196	6,316,557	8,037 57	13,602 94	21,640 51
Texas.....	103	3,020,868	5,503,345	8,215 82	13,758 32	21,974 14
Arkansas.....	14	207,903	336,328	352 60	840 82	1,193 42
Kentucky.....	68	6,454,156	6,134,643	15,010 92	15,336 37	30,347 29
Louisville.....	16	5,585,957	5,271,471	12,706 05	13,178 64	25,884 69
Tennessee.....	30	1,758,029	2,837,835	3,365 55	7,094 48	10,460 03
<b>Southern States.....</b>	<b>494</b>	<b>33,921,406</b>	<b>47,019,984</b>	<b>75,820 21</b>	<b>113,484 56</b>	<b>189,304 77</b>
Ohio.....	239	5,968,718	15,002,726	12,562 33	37,890 15	50,452 48
Cincinnati.....	16	1,707,174	4,591,510	3,777 02	11,478 76	14,255 78
Cleveland.....	10	962,317	12,663,332	1,439 88	15,102 54	16,542 42
Indiana.....	149	4,636,292	10,541,861	10,777 33	23,132 38	33,909 71
Illinois.....	317	4,034,349	12,394,243	8,055 23	20,216 94	37,872 17
Chicago.....	33	3,964,828	7,830,766	4,045 84	19,574 40	23,620 33
Michigan.....	140	2,327,238	5,183,535	5,511 93	12,958 57	18,470 50
Detroit.....	16	1,110,775	5,848,086	1,869 26	12,808 17	14,677 43
Wisconsin.....	92	1,405,619	3,040,814	3,152 14	9,124 45	12,276 59
Milwaukee.....	10	743,541	5,765,170	1,772 20	14,412 91	16,185 11
Iowa.....	200	5,084,219	9,291,284	11,920 27	23,055 51	34,975 78
Minnesota.....	82	1,670,319	3,520,090	4,077 73	8,237 51	12,315 24
Missouri.....	171	4,053,300	10,037,955	8,988 61	26,594 29	35,583 00
Saint Louis.....	28	6,335,989	10,543,846	12,324 13	41,350 89	53,674 02
Kansas.....	126	1,369,532	3,175,805	3,183 11	7,929 29	11,122 40
Nebraska.....	46	444,349	1,250,437	1,053 30	3,125 92	4,179 22
<b>Western States.....</b>	<b>1,771</b>	<b>46,036,530</b>	<b>128,502,460</b>	<b>64,110 21</b>	<b>296,011 87</b>	<b>360,122 18</b>
Oregon.....	12	1,078,739	1,353,172	2,573 01	3,254 83	5,827 84
California.....	87	10,337,967	16,707,636	25,482 40	36,277 48	61,759 88
San Francisco.....	28	21,369,142	64,312,295	40,806 29	110,794 98	151,401 27
Colorado.....	32	635,180	1,724,854	1,587 84	4,312 04	5,899 88
Nevada.....	19	368,737	1,638,318	921 83	4,220 76	5,142 59
Utah.....	10	230,000	857,933	575 00	2,144 79	2,719 79
New Mexico.....	5	5,000	86,251	12 50	215 62	228 12
Wyoming.....	4	106,411	191,290	286 03	478 22	744 25
Idaho.....	3	6,083	45,304	15 20	113 25	128 45
Dakota.....	12	109,093	200,095	254 81	502 46	757 27
Montana.....	8	154,204	284,136	385 51	710 31	1,095 82
Washington.....	4	207,000	339,191	517 50	849 96	1,367 46
Arizona.....	7	81,827	76,107	204 56	190 24	394 80
<b>Pacific States and Territories.....</b>	<b>231</b>	<b>34,683,283</b>	<b>87,808,302</b>	<b>73,402 48</b>	<b>104,064 94</b>	<b>237,467 42</b>
<b>Totals.....</b>	<b>4,312</b>	<b>201,241,484</b>	<b>1,180,122,835</b>	<b>386,247 56</b>	<b>1,113,554 75</b>	<b>1,499,802 31</b>

Similar tables for previous semi-annual periods will be found in the appendix.

From the State authorities reports of State and savings-banks and trust and loan companies have been obtained in the case of twenty-one States and the District of Columbia. Reports of State banks have been received from twenty States, of savings-banks from fourteen States, and of trust and loan companies from six States. From seventeen States no reports have been received. In the appendix may be found statements of the returns received from the various States, and a summary of the whole.

This summary, as may be seen from the number of States from which no returns have been received, and from the incompleteness of some which have been received, does not present a satisfactory exhibit of the resources and liabilities of the State and savings-banks of the United States, and it will be impossible to obtain such an exhibit until laws are enacted by the legislatures of all the States which shall require these banks to make uniform reports to the proper officers.

In the Comptroller's report for 1877 the form of a bill was presented, substantially the same as one passed by the legislature of Ohio in 1876, which, should it become a law in each of the States, would obviate the difficulty now experienced in obtaining full and accurate statistics in regard to banks doing business under State laws.

In concluding this report, the Comptroller gratefully acknowledges the ability and devotion to the public service of the officers and clerks associated with him in the performance of official duties.

JOHN JAY KNOX,  
*Comptroller of the Currency.*

Hon. SAMUEL J. RANDALL,  
*Speaker of the House of Representatives.*

## REPORT OF THE DIRECTOR OF THE MINT.

TREASURY DEPARTMENT,  
OFFICE DIRECTOR OF THE MINT,  
November 11, 1879.

SIR: I have the honor to submit the following report of the operations of the mints and assay-offices of the United States during the fiscal year ended June 30, 1879.

The nine institutions subordinate to this bureau comprise the four coinage mints at Philadelphia, San Francisco, Carson, and New Orleans, the mint at Denver operated as an assay-office, and the assay-offices at New York, Boisé City, Helena, and Charlotte. The operations authorized by law to be carried on at the mints and assay-offices may be briefly enumerated:

1. The receiving, melting, and assaying of gold and silver deposits, and paying from Treasury funds in gold coin or bars for gold deposits, and in silver bars for silver deposits, at all the mints and assay-offices.
2. The parting and refining of gold and silver bullion and manufacture of fine bars at the coinage mints and the assay-office at New York.
3. The coinage of gold and silver bullion at the mints at Philadelphia, San Francisco, Carson, and New Orleans.
4. The coinage of minor coins at the mint at Philadelphia.
5. The manufacture of medals and proof coin, and the execution of coinage-dies for all the mints, at the mint at Philadelphia.

## DEPOSITS AND PURCHASES.

During the fiscal year the total deposits of gold and silver—including silver purchases—amounted to \$71,179,654.65, of which \$42,254,156.80 were gold, and \$28,925,497.85 were silver.

Of the above amounts \$38,549,705.89 of gold and \$26,934,728.56 of silver were of domestic production; \$198,083.17 of gold and \$10,607.79 of silver were United States coin; \$1,069,796.89 of gold and \$1,072,919.29 of silver were of foreign bullion; \$1,498,819.71 of gold and \$698,632.49 of silver were foreign coin; and \$937,751.14 of gold and \$208,609.72 of silver were of plate and other manufactured articles.

The deposits and purchases of gold and silver bullion, including re-deposits, were as follows:

Mint or assay-office.	Gold deposits.	Silver deposits and purchases.	Total.
Mint at Philadelphia .....	\$9,662,082 22	\$9,678,094 23	\$19,340,176 45
Mint at San Francisco .....	29,440,456 04	13,889,428 81	43,329,884 85
Mint at Carson .....	318,852 71	1,020,660 24	1,339,512 95
Mint at Denver .....	410,889 33	6,120 46	417,009 79
Mint at New Orleans .....	67,413 67	1,128,184 06	1,195,607 73
Assay-office at New York .....	11,345,562 98	7,019,698 35	18,365,261 33
Assay-office at Boisé .....	67,266 17	4,218 19	71,484 36
Assay-office at Helena .....	405,471 16	324,707 17	730,178 33
Assay-office at Charlotte .....	53,947 83	397 21	54,345 04
Total .....	51,771,942 11	33,071,518 72	84,843,460 83

A number of the deposits made at the assay-offices found their way to the coinage mints or to different assay-offices in the form of bars and were redeposited, and, although not augmenting the net receipts, increased the amount of bullion operated upon, either in the conversion of unparted into fine bars or in coinage, and this to the extent of \$13,663,806.18, of which \$9,517,785.31 were gold and \$4,146,020.87 were silver.

## PARTING AND REFINING.

The amounts of gold and silver separated in the refineries of the coinage mints and the assay-office at New York were \$20,759,549.97 of gold and \$10,687,526.97 of silver, a total of \$31,447,076.94, and were in detail as follows:

Mint.	Gold.	
	Fine ounces.	Value.
Mint at Philadelphia .....	46,822.657	\$967,910 24
Mint at San Francisco .....	517,608.154	10,699,910 16
Mint at Carson .....	14,184.950	292,195 84
Assay-office at New York .....	425,677.468	8,799,534 23
Total .....	1,004,243.229	20,759,549 97
Mint.	Silver.	
	Fine ounces.	Value.
Mint at Philadelphia .....	321,408.01	\$415,557 83
Mint at San Francisco .....	4,489,622.67	5,804,764 93
Mint at Carson .....	282,529.46	365,290 61
Assay-office at New York .....	3,172,573.80	4,101,913 60
Total .....	8,266,134.14	10,687,526 97

Mint.	Total.	
	Fine ounces.	Value.
.....	368,230.667	\$1,383,468 07
.....	5,007,231.024	16,504,675 09
.....	296,664.410	657,485 95
.....	3,598,251.268	12,901,447 83
.....	9,270,377.369	31,447,076 94

## COINAGE.

ring the year amounted to \$68,312,592.50, and con-  
pieces of gold, of the value of \$40,986,912; 27,228,850  
of the value of \$27,227,882.50; and of minor coins  
of the nominal value of \$97,798. The coinage at the  
as follows:

Mint.	Pieces.	Value.
.....	936,564	\$11,329,352 00
(Dollars) .....	12,124,500	12,124,500 00
(Coins) .....	1,350	352 50
.....	9,620,200	97,798 00
.....	22,682,614	23,552,032 50
.....	1,798,500	\$29,329,250 00
(Dollars) .....	12,722,000	12,722,000 00
.....	14,520,500	42,051,250 00
.....	24,357	328,310 00
(Dollars) .....	1,644,000	1,644,000 00
.....	1,668,357	1,972,310 00
(Dollars) .....	737,000	737,000 00
.....	39,608,471	68,312,592 50

of gold as part of the circulation, consequent upon the  
United States notes into coin, it was anticipated would  
for the smaller denominations of gold coin, and during  
there has been a larger coinage of eagles, half-eagles,  
than in any preceding year during a period of sixteen  
age of eagles and half-eagles will be continued until  
sified; but because the cost to coin a given value of  
ed by every subdivision, and on account of greater  
and inconvenience in use in large transactions, it is not  
le to coin a greater proportion of such denominations  
ed by the public.

ge has been almost exclusively of standard silver dol-  
227,500 were coined during the year, and the total  
ber 1, 1879, has been \$45,206,200. There was no  
ollars or subsidiary coins except the striking of speci-  
f-sets at the Philadelphia Mint.

t of subsidiary coin issued since the passage of the  
as been \$42,974,931. The full amount coined was  
1,020,000 in dimes was recoined into pieces of larger  
the mint at San Francisco.

## BARS.

The bars manufactured—fine and unparted—amounted to \$22,022,614.79, of which \$12,976,812.68 were gold and \$9,045,802.11 were silver. They were made at the mints and assay-offices as follows:

Mint or assay-office.	Fine gold.	Unparted gold.	Mint gold.	Total gold.
Mint at Philadelphia.....	\$89,997 82	.....	.....	\$89,997 82
Mint at San Francisco.....	.....	\$1,798 29	.....	1,798 29
Mint at Carson.....	.....	.....	.....	.....
Mint at New Orleans.....	.....	.....	.....	.....
Mint at Denver.....	.....	413,103 06	.....	413,103 06
Assay-office at New York.....	6,638,213 41	.....	\$5,309,001 11	11,948,214 52
Assay-office at Boise.....	.....	64,280 00	.....	64,280 00
Assay-office at Helena.....	.....	405,471 16	.....	405,471 16
Assay-office at Charlotte.....	.....	53,547 83	.....	53,547 83
Total.....	6,729,211 23	938,600 34	5,309,001 11	12,976,812 68

Mint or assay-office.	Fine silver.	Unparted silver.	Total silver.
Mint at Philadelphia.....	\$125,614 22	.....	\$125,614 22
Mint at San Francisco.....	1,555,184 63	\$24,012 75	1,579,197 38
Mint at Carson.....	.....	.....	.....
Mint at New Orleans.....	.....	.....	.....
Mint at Denver.....	.....	2,165 50	2,165 50
Assay-office at New York.....	7,006,828 98	.....	7,006,828 98
Assay-office at Boise.....	.....	6,891 65	6,891 65
Assay-office at Helena.....	.....	324,707 17	324,707 17
Assay-office at Charlotte.....	.....	397 21	397 21
Total.....	8,687,627 83	358,174 28	9,045,802 11

Fine gold bars were manufactured and issued only at the mint at Philadelphia and the assay-office at New York. Of the total amount of gold bars, \$12,976,812.68, the assay office at New York made \$11,948,214.52, of which amount \$8,754,734.26 were redeposited at the mint at Philadelphia, and \$2,901,844 were delivered to depositors for use in the arts and manufactures.

The total amount of silver bars was \$9,045,802.11, of which \$1,555,184.63 in fine bars, made at the mint at San Francisco, were probably exported; and of \$7,006,828.98, made at the assay-office at New York, \$4,482,975 were delivered for manufacturing purposes, and the balance received at the Philadelphia mint for coinage.

## MEDALS AND DIES.

During the year there were struck at the mint at Philadelphia 114 medals of gold, 1,037 of silver, and 770 of bronze, the profits on which amounted to \$2,493.36; 544 proof-sets of United States coins were also made, and 905 coinage and medal dies executed.

Full detailed statements of the foregoing operations will be found in the appendix.

## APPROPRIATIONS, EARNINGS, AND EXPENDITURES.

The amount of the specific appropriations made by Congress for the support of the several mints and assay-offices of the United States for the fiscal year ended June 30, 1879, was \$1,243,640, of which the sum of \$1,175,249.50 was expended. The appropriations and expenditures were as follows:



*Appropriations.*

Office.	Salaries.	Wages.	Contingent.	Repairs and new machinery.	Total.
.....	\$34,850	\$245,000	\$82,500	.....	\$402,350
.....	24,900	275,600	87,500	.....	387,400
.....	23,549 90	70,999 38	21,659 15	\$8,500 00	154,530
.....	13,133 48	56,298 91	24,902 08	71,257 88	175,592 35
.....	7,950 00	8,300 00	3,345 41	.....	19,595 41
.....	32,150 00	20,843 50	7,705 63	.....	60,699 13
.....	5,677 14	5,104 20	7,821 12	.....	18,602 52
.....	3,000 00	.....	2,800 21	.....	5,800 21
.....	2,500 00	.....	624 91	.....	3,124 91
.....	157,600	734,800	298,340	83,500	1,243,640

*Expenditures.*

Salaries.	Wages.	Contingent expenses.	New machinery and repairs.	Total.
\$34,850 00	\$284,764 10	\$82,495 73	.....	\$402,109 83
24,900 00	260,990 84	75,864 63	.....	361,755 47
23,549 90	70,999 38	21,659 15	\$8,500 00	132,168 43
13,133 48	56,298 91	24,902 08	71,257 88	170,592 35
7,950 00	8,300 00	3,345 41	.....	19,595 41
32,150 00	20,843 50	7,705 63	.....	60,699 13
5,677 14	5,104 20	7,821 12	.....	18,602 52
3,000 00	.....	2,800 21	.....	5,800 21
2,500 00	.....	624 91	.....	3,124 91
152,710 52	710,309 99	226,709 47	79,757 88	1,175,478 86

the expenses of parting and refining at the coinage and States assay-office, New York, is provided for by a portion of the charges for these operations collected of

received on account of parting and refining bullion for the year ended June 30, 1879, was \$254,253.33. Included in the sum of \$18,706.40 surplus bullion returned by the mints at San Francisco and assay-office at New York, in settlement of their accounts, and which surplus was from gold contained in silver deposits in quantities to make any allowance to depositors individually, but the deposits came to be operated upon in the aggregate,

statement shows the amount of charges and expenditures for the wastage of the melter and refiners on account of parting bullion at the mints at Philadelphia, San Francisco, and assay-office at New York, during the fiscal year ended

Mint.	Charges collected.	Expenses.
.....	\$5,550 81	\$3,560 71
.....	148,125 17	112,953 17
.....	5,340 30	5,809 72
.....	95,200 05	75,788 76

The gain arising under section 3526 Revised Statutes on the coinage of silver during the fiscal year ended June 30, 1879, was \$3,287,446.09, from which \$17,439.48 was paid for wastage, \$93,474.32 for expenses of distribution, and of the remainder, the sum of \$2,954,454.69 was paid into the Treasury.

The profits on the minor coinage from July 1, 1878, to June 30, 1879, were \$31,292.33, from which \$1,299.97 were paid for transportation, and \$775 for wastage.

#### PURCHASES OF SILVER BULLION.

Silver bullion has been purchased, during the year, at the coinage mints and at the assay-office at New York, for the coinage of standard silver dollars. Authority was given to the superintendents of the mints at Philadelphia, San Francisco, Carson City, and New Orleans to purchase in lots of less than ten thousand ounces. During the year about 1,000,000 standard ounces were thus purchased by them. Purchases in lots of ten thousand ounces and over are made by the Director of the Mint, with the approval of the Secretary of the Treasury, upon the recommendation of a commission designated March 9, 1878, consisting of the Director of the Mint, Hon. H. F. French, Assistant Secretary of the Treasury, and James Gilfillan, Treasurer of the United States, who examine and consider all offers that may be received. The Director of the Mint and the Assistant Secretary of the Treasury are each required to keep a detailed record of all offers, and the action taken thereon.

Prior to October 17, 1878, offers were received at any time. On that date, notice was given that offers for the sale of silver bullion, in lots of not less than ten thousand ounces, would be received and considered on Wednesday of each week.

Owing to the large amount of silver bullion which had accumulated at the Philadelphia mint, it was deemed advisable to cease purchasing for delivery at that point, and bullion dealers were notified February 6, 1879, that, until further notice, offers for the sale of silver would be considered for delivery at the mints at San Francisco and New Orleans only, and purchases, except by the superintendent, were suspended during the remainder of the fiscal year.

Notwithstanding the fact that the mint at Carson City is located but a short distance from the productive mines of the Comstock Lode, higher prices were demanded for bullion deliverable at Carson than at San Francisco, and, in addition, the rates charged by the express company for transportation of silver dollars were higher from Carson than from San Francisco.

For these reasons, it was decided, with the approval of the Secretary of the Treasury, to suspend the coinage of the standard silver dollar at the Carson mint, and instructions were given February 26, 1879, to the superintendent thereof to coin up as closely as practicable the bullion then on hand, and to cease purchasing under the authority previously given him to purchase lots of less than ten thousand ounces, and to retain only such number of workmen and adjusters as might be necessary to manipulate such gold bullion as should be deposited for conversion into coin or fine bars, and the silver bullion deposited for returns in fine bars.

About the time instructions discontinuing the coinage of silver dollars at Carson were given a slight demand arose at San Francisco for silver for export, which, with the falling off in the production, enabled bullion dealers in many instances to dispose of their bullion at higher prices than that which the department regarded as the full market price; hence the purchases at that point have for several months past been com-

paratively light, and at the close of the fiscal year the stock of silver bullion at the San Francisco mint was reduced to merely a nominal amount.

The purchases of silver bullion for the New Orleans mint have, with the exception of some four hundred thousand ounces, been in lots less than ten thousand ounces, and consisted principally of Mexican dollars and old plate. When this mint was reopened for coinage it was expected that a considerable amount of silver bullion would be supplied from Mexico, but these expectations have not thus far been realized. Notwithstanding the fact that the department has offered to pay the bankers and bullion dealers in New Orleans the highest market price for silver, deliverable at the mint in that city, only two or three offers for the sale of silver have been made to the department by them, and in each case at a price above the market rate. In some instances offers have been received from New York to deliver silver at New Orleans, but at prices above the market rate, and the offers, with few exceptions, were declined.

At the date of the passage of the specie-resumption act, January 14, 1875, the amount of silver bullion belonging to the government in the mints at Philadelphia, San Francisco, Carson City, and the assay-office at New York, approximated 1,750,000 standard ounces. This and the silver subsequently purchased for the fractional coinage and for the standard dollar on hand and uncoined June 30, 1878, amounted to 7,111,059.07 standard ounces. From July 1, 1878, to June 30, 1879, the purchases, including silver parted from gold, were 21,334,245.96 standard ounces.

The amount consumed during the fiscal year in the coinage of 27,227,500 standard silver dollars and \$382.50 in fractional silver coin, including wastage (14,987.05 ounces), was 23,403,928.07 standard ounces, leaving a balance on hand June 30, 1879, of 5,031,376.96 standard ounces.

The average London price of silver bullion from July 1, 1878, to June 30, 1879, was 50½ pence British standard, 925 fine, equivalent at average rate of exchange, 488.04, to 1.00534+ per ounce United States standard, 900 fine.

The average price of silver bullion purchased during the year was 100.96+ cents per ounce standard.

The amount of silver bullion purchased, including silver parted from gold deposits, from March 1, 1878, to September 30, 1879, was 37,364,918.08 standard ounces, at a cost of \$38,594,435.89, being an average monthly purchase of \$2,031,286.10 worth of bullion. The coinage of silver dollars for the same period was 42,634,100, an average of 2,243,900 per month.

The following statement exhibits the amount of silver bullion purchased and parted from gold deposits at the respective coinage mints and the assay-office at New York, from July 1, 1878, to June 30, 1879:

*Mint at Philadelphia.*

	Standard ounces.	
Purchased .....	7, 441, 391. 02	\$7, 480, 395 30
Parted .....	12, 949. 83	13, 146 42
Total .....	7, 454, 340. 85	7, 493, 541 72

*Mint at San Francisco.*

Purchased .....	10, 831, 730. 83	10, 924, 846 72
Parted .....	75, 438. 76	77, 007 36
Total .....	10, 907, 169. 59	11, 001, 854 08



*Mint at Carson City.*

	Standard ounces.	
Purchased .....	986,547.82	\$1,008,472 90
Parted .....	12,006 11	12,187 34
Total .....	998,553.93	1,020,660 24

*Mint at New Orleans.*

Purchased .....	635,548.69	632,583 14
Parted .....	292.48	292 48
Total .....	635,841.17	632,875 62

*Assay-Office at New York.*

Purchased .....	1,251,572.71	1,300,044 73
Parted .....	86,767.71	91,715 33
Total .....	1,338,340.42	1,391,759 06

*Recapitulation.*

Total amount purchased .....	21,146,791.07	21,346,342 79
Total amount parted .....	187,454.89	194,348 91
Total .....	21,334,245.96	21,540,691 70

## ANNUAL ASSAY.

The commission appointed under the provisions of section 3547 of the Revised Statutes, assembled at the mint at Philadelphia and tested in the presence of the Director of the Mint the weight and fineness of the coins reserved from every delivery of coin made by the coiner to the superintendent at each of the coinage mints.

The examination of the coins showed, and the commission reported, that in all cases, both in weighing of mass and single pieces, the weights were well within the legal tolerance, and the fineness of the coins, both melted in mass and individual pieces, exhibited a satisfactory conformity with the law.

In accordance with the provisions of section 3549 of the Revised Statutes, the commission verified the standard ounce weights with the standard troy pound of the mint of the United States, and upon comparing the weights used in the daily transaction of business with the standards they were found to be exact.

## FACILITIES FOR ASSAYING.

Specimens of gold and silver bearing ores, as well as other minerals, are frequently received by this office, for assay, from members of Congress and individuals in various sections of the country. Under existing arrangements they are forwarded to the mints or assay-offices to be assayed, thereby causing delay in returns and interference to some extent with the regular business of those institutions. It is, therefore, desirable that the mint bureau should have proper facilities extended to it for assaying ores and specimens of foreign coins, and also for the purpose of making the monthly tests of weight and fineness of the coins issued from the various United States mints. At present these tests are made by sending specimens of the coinage of each mint to one of the other mints or to the assay-office at New York, and the reports thereon are transmitted to this office; but it is desirable that this operation should be performed under the immediate supervision of the Director of the Mint.

The necessity of having proper facilities for testing the weight and fineness of our coins, as well as to discriminate between genuine coin and well-executed counterfeits was apparent to my predecessor in office and upon his recommendation an appropriation of \$500 was made at the second session of the Forty-fourth Congress for "fitting up an assay laboratory in the office of the Director of the Mint," but owing to a lack of room in the Treasury Building, no suitable place could be obtained, and the appropriation remained unexpended excepting the sum of \$19.50 paid for weights.

The removal of the Bureau of Engraving and Printing to the new building now in course of construction for its accommodation, will no doubt leave an available room in the Treasury building which could be utilized for the desired purpose. I therefore respectfully recommend that suitable legislation be requested at the ensuing session of Congress to provide means for establishing an assay laboratory in the office of the Director of the Mint.

#### COINAGE OF MINOR COINS.

Owing to the general increased business activity in the country an unusually heavy demand has been created for the minor coins, and the mint at Philadelphia has been called upon to furnish one-cent pieces in excess of its capacity for striking this denomination of coin, and at the same time execute the quota of standard silver dollars required by law.

Of the minor coins, a sufficient number of 5-cent nickel pieces are held by the mint and Treasury to supply the present demand, and the same may be said of the 3-cent nickel piece, which, however, has never been a popular denomination of coin.

The three-cent piece (silver) was authorized by the act of March 3, 1851, entitled "An act to reduce and modify the rates of postage in the United States and for other purposes," and was intended to fulfill a special purpose—the purchasing of the 3-cent postage-stamp. That it was not contemplated that they would be extensively employed for general trade purposes is evident from the fact that the act authorizing their coinage made them a limited tender in payment of sums of thirty cents and under. From the small diameter and thickness of the coin it was found to be exceedingly inconvenient, and the act of March 3, 1865, authorized the coinage of the 3-cent nickel piece.

By the provisions of the coinage act of 1873 the coinage of the 3-cent silver piece and 2-cent bronze coin was discontinued, the 3-cent nickel piece being retained.

In determining what denominations of coins will best meet the requirements of the community for change purposes, the demands of the people and the experience of other and older countries are safe guides. The history of the minor coinage since the date above mentioned, 1865, shows the nominal value of the 5-cent nickel pieces coined has amounted to \$5,774,345; of the 3-cent nickel pieces, to \$750,192; and of 1-cent bronze pieces, to \$1,259,625.

The demand for the 3-cent nickel piece and its coinage for the last few years has been merely nominal.

The coinage of the 2-cent bronze pieces, during the eight years their issue was authorized, amounted to \$912,020, and was not much less than the value of the 1-cent pieces during the same period, and largely exceeded that of the 3-cent nickel pieces for the fourteen years since their issue was authorized.

In the coinage changes made by European nations that have adopted the decimal system of coinage, such as the States of the Latin Union,

France, Belgium, Italy, Switzerland, and Greece, together with Germany, Spain, Sweden, Norway, and Denmark, the minor coin divisions of 5, 2, and 1 were considered best adapted for general change purposes.

A disturbance of the coinage of a country, either in the fineness, weight, or denominations, is a subject of grave importance, and should not be undertaken without careful consideration. In case any change should be contemplated in the coinage laws, I respectfully suggest for your consideration the propriety of recommending the discontinuance of the 3-cent nickel piece and the reauthorization of the issue of the 2-cent bronze coin, and for the following reasons:

1st. That there has never been a demand to any considerable extent for the 3-cent nickel piece, the total coinage of which has amounted to only \$856,122.

2d. The existing denominations of United States notes less than ten dollars are 5, 2, and 1, and have satisfactorily met the requirements of trade. No necessity for denominations less than ten dollars other than those seems to have arisen, and the same subdivisions for coins, less than the dime, would be equally serviceable.

3d. The amount of 1-cent pieces in circulation being already large, and the demand on the mint for a further coinage increasing, the issue of a 2-cent piece would probably enable the mint to meet the requirements of the people, and diminish the coinage of 1-cent pieces, the demand for which can be more easily relieved if the issue and free delivery of the 2-cent piece is authorized.

#### EXAMINATION OF THE MINTS AND ASSAY-OFFICES AND ANNUAL SETTLEMENT.

In order to make myself acquainted with the condition of the mints and assay-offices as required by section 345 of the Revised Statutes, I visited all the institutions under the control of this bureau, except the assay-offices at Boise City and Helena.

Section 3541 of the Revised Statutes requires that "at least once in every year, and at such time as the Director of the Mint shall appoint, there shall be an accurate and full statement of the accounts of the coiner and the melter and refiner, at which time those officers shall deliver up to the superintendent all the coins, clippings, and other bullion in their possession, accompanied by statements of all the bullion delivered to them since the last annual settlement, and all the bullion returned to them during the same period, including the amount returned for the purpose of settlement."

The annual settlement required by this section has been made at the close of each fiscal year.

Just before the close of the last fiscal year I visited the mint at Denver, and weighed and counted the bullion and moneys at that institution, and made an examination of their books. I then proceeded to the Carson mint, and on the 30th of June arrived at San Francisco. I personally superintended the annual settlements at the mints at Carson City and San Francisco, and all the bullion and coin was weighed and counted in my presence and the balances shown by the books verified.

Representatives from this bureau were present and superintended the annual settlements at the mints at Philadelphia and New Orleans and the assay-office at New York, and rendered reports to me in writing of the same.

The annual settlements at the mints and at the New York assay-office were highly satisfactory, and the wastage of the operative officers during the year was found to be far within the legal allowance.

assay offices of the United States, and has largely contributed, both by his writings and by official reports, to a more extended knowledge of the principles upon which coinage and currency should be based.

#### REDEMPTION OF UNITED STATES NOTES AND SUBSIDIARY COIN.

The principal events relating to monetary affairs in the United States that have occurred during the last fiscal year, as the result of legislation, have been—

First. The resumption of specie payments through the coin redemption of United States notes upon presentation to the Assistant Treasurer at New York; and,

Second. Provision for the exchange of subsidiary silver coinage for full legal-tender money.

The resumption of specie payments after a suspension is always an epoch in the monetary history of a country.

The necessity of a temporary resort to irredeemable paper currency has been the experience of almost every commercial nation, and its return to a stable measure of value is a matter of rejoicing. Our own return has been accomplished in a manner exceedingly gratifying, without disaster, and accompanied by no financial shock or crisis.

The powers conferred upon the Secretary of the Treasury to prepare for resumption were ample, although it was declared by many to be impossible to accumulate in the country the necessary reserve of coin, without contracting the volume of the paper circulation.

On the first of January, 1879, the mints had added within two years \$90,000,000 in gold and \$50,000,000 in silver to the stock of coin, with comparatively but a slight reduction in the paper circulation, and since the first of January last, instead of there appearing to be a redundancy of paper circulation, tending to drive the specie abroad, the stock of coin and bullion in the country has increased during the calendar year to the present time nearly or quite one hundred millions of dollars, with an actual increase instead of a diminution of the coin in the Treasury.

Our experience in returning to specie payment without material reduction of the paper circulation seems to indicate that the depreciation of United States notes for the last eight years has not been due to their excess, but to their inconvertibility, and that resumption not only became possible, but assured, as soon as the accumulation of a sufficient coin reserve in the Treasury was determined upon, and measures adopted for carrying that policy into effect.

#### EXCHANGE OF SUBSIDIARY COINS.

Attention was called in the last annual report of the Secretary of the Treasury to the accumulation of fractional coin in certain localities and scarcity in others, and the recommendation made that their redemption in United States notes be authorized. It was there said:

The only way by which moneys of different kinds and intrinsic values can be maintained in circulation at par with each other is by the ability, when one kind is in excess, to exchange it for the other. This principle is applicable to coin as well as to paper money.

Acting upon this recommendation, and at the last session of Congress, an act of June 9, 1879, subsidiary silver coins were made receivable for full legal-tender money in sums or multiples of five cents, and the United States Treasury, and their legal-tender money, five to ten dollars.

The new coins were received with reluctance by bankers and busi-

chanics and others from the mints were sent to superintend the repairing of old and erection of new machinery, which had been procured. The superintendency was assumed by Henry S. Foote in December, 1878, and coinage operations commenced February 20, 1879.

The mint has not been worked to its full capacity, for the reason that like difficulty has been experienced as at San Francisco and Carson in procuring supplies of silver bullion.

*Assay-Office at New York.*—This institution is in as effective condition as the limited facilities of the building will permit. The present receipts of gold of foreign importation are greater than for any previous corresponding period of time, but notwithstanding the large amount of work performed, all demands for coin or fine bars in payment for deposits are promptly met.

When the importance of this office is considered, situated as it is in the great mercantile and money center of the country, it is to be regretted that better facilities are not at its command for rapid prosecution of business.

*Mint at Denver; Assay-Offices at Boise, Helena, and Charlotte.*—The operations of these institutions are limited by law to melting and assaying gold and silver bullion, and paying for the same from Treasury funds. They are, as thus operated, chiefly of local benefit to the mining sections by enabling the miner to convert his bullion immediately into coin.

They are all in a satisfactory condition of efficiency as far as their management is concerned.

The mint building at Denver, which I personally inspected during a recent visit to the Western mints, is in an unsuitable condition for minting purposes. The irregular and unequal settling of the foundations has caused the walls to crack to such an extent as to render the edifice unsafe for the employes and the government property contained therein. Provision should be made, not only to restore the building, but to provide additional facilities for manipulating the precious metals.

This mint is located in the midst of a prosperous and rapidly growing community. Being at the railroad center of connecting lines from the principal mining sections of the State, as well as from New Mexico, the wealth of precious metals pouring in should be treated there, and settlement made with depositors.

I estimate the production of Colorado alone to be at the rate of at least \$15,000,000 of gold and silver per annum, and the present facilities at the Denver mint for operating upon this amount of bullion are totally inadequate.

In closing a review of the history of the Mint service during the year it would be incomplete without proper mention of the lamentable death on the 27th of January of my predecessor, Dr. H. R. Linderman, who for more than twenty-five years had been connected with the mints, and as Director, had been at the head of the Mint Bureau since its creation in 1873.

Monetary questions and the principles and practical details of coinage had for many years received his earnest and special consideration and his careful researches had acquired for him a wide reputation, not only in this country but on the continent of Europe, where his report and conclusions are quoted as authoritative by writers and statisticians.

Mr. C. W. Fremantle, deputy master of the Mint of England, in his last annual report of the Royal Mint, says:

In Dr. Linderman the American Government has lost a valuable officer, who has since 1873 exercised with great ability the supreme control over all the mints and

essay offices of the United States, and has largely contributed, both by his writings and by official reports, to a more extended knowledge of the principles upon which coinage and currency should be based.

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The only way by which moneys of different kinds and intrinsic values can be maintained in circulation at par with each other is by the ability, when one kind is in excess, to readily exchange it for the other. This principle is applicable to coin as well as to paper money.

Action was taken upon this recommendation, and at the last session of Congress, by the act of June 9, 1879, subsidiary silver coins were made interchangeable with full legal-tender money in sums or multiples of twenty dollars at the United States Treasury, and their legal-tender quality increased from five to ten dollars.

These coins were then received with reluctance by bankers and busi-

ness men, notably on the Pacific coast, where they were rated 8 per cent. below full legal-tender money.

The effect of the law has been to bring these coins to par. Since the passage of the act, and up to November 1, there have been \$12,172,601.70 presented for exchange for other money. But for the return of the old coinage from foreign countries the demand upon the Treasury for subsidiary coins for circulation would equal the current deposits for exchange.

The principle that a nation should receive for public dues, and in exchange at its Treasury for its legal-tender money, all subsidiary or token coins that it has issued, was discussed and approved by the delegates of the States composing the Latin Union at their late monetary conference and unanimously agreed to.

#### INTERNATIONAL MONETARY CONFERENCE.

It is to be regretted that the efforts of our government to adopt by international agreement a common ratio between gold and silver, and establish the use of bi-metallic money, failed in its object.

The commissioners appointed by the United States and the principal European nations met at Paris in August, 1878, and the subject presented received the attention its importance demanded, and was fully and ably discussed.

From the report of the proceedings of the Conference it appears that an opinion was generally prevalent in Europe that the change in legislative action and public sentiment in this country resulted from a selfish interest in maintaining the price of silver, from its having become an important element of production, and it was not realized that a continued decline in the value of silver would result more disastrously to the wealth of Europe than to the United States; that Europe could not so well bear a loss in the money supply as the United States with its immense undeveloped resources.

Although our delegates failed to secure any recommendation to the respective governments represented at the Conference, for the use of gold and silver at a common relative value, their efforts were not without practical and beneficial results.

The discussions awakened and the information presented seem to have created a much more favorable tendency toward the use of silver as full legal-tender money, not only in the opinions of representatives at the Conference, but among leading financial writers. They are now beginning to realize that this subject is viewed in this country rather from its effect upon general business than its relations to the product of an export insignificant in value compared with the staple products of the country; that the changed public opinion results from "arguments showing that the dangerous effect upon industry by dropping one of the precious metals from the standard of value, outweigh all theoretical objections to the bi-metallic system; and that if it were possible for the leading commercial nations to fix by agreement an arbitrary relation between silver and gold, even though the market value might vary somewhat from time to time, it would be a measure of the greatest good to all nations."

Prior to the meeting of the Conference it was confidently predicted by advocates of universal mono-metallism that—

If the Conference meet at all its proceedings will amount to no more than a regulated conversation, which can be useful only so far as it may tend to dispel, more efficaciously than other methods, illusions and fallacies which have already been refuted over and over again.



The facts and arguments presented by our commissioners tended to dispel illusions and fallacies directly the opposite of these suppositions. Apparently as the result of the discussion a great change has occurred and is progressing in public opinion and in the expressed views of public men more favorable to bi-metallism.

Particularly is this the case in the two leading nations favoring the single standard, Germany and England.

Germany has suspended the further sale of silver, and some of her statesmen question the wisdom of demonetization.

In less than a year after the meeting of the Conference (the following May), Mr. Henry Hucks Gibbs, late governor of the Bank of England, and one of the representatives of the English Government to the Conference, wrote to that distinguished advocate of bi-metallism, Mr. Henri Cernuschi—

I am gone over to the enemy and am going to attack, with you, the solid ramparts of mono-metallism.

These words are indicative of the revolution in public sentiment, and are especially significant coming from one who refused to concur in the views of our representatives.

Subsequently he publicly announced his change of opinion upon mature examination, and, at the close of a pamphlet lately published by him, says:

I have expressed in it conclusions which differ very widely from the spirit of the report of the proceedings of the Paris Conference presented to the government by my colleagues and myself. I fully concurred in that report; but the more I have, since then, thought over the subject of the Conference the more I have been led to distrust some part of our reasoning, and to doubt in part the wisdom of the conclusion to which we came. In no case was it to be expected that the Conference would have simply affirmed the original resolutions of the commissioners of the United States. Indeed, the evil from which we suffer had not at that time pressed so strongly upon the minds of Englishmen as it has since done, and public opinion was less prepared than I think it now is to look with favor on any change which might promise to alleviate it.

#### MONETARY STATISTICS.

In addition to procuring and presenting the usual statistics of the production and circulation of the precious metals in the United States, the inquiry has been widened and pains have been taken to obtain similar information in regard to the production, coinage, and consumption of foreign countries.

Possessing richer and more extensive mines of gold and silver, and appropriating a larger amount for coinage and manufactures than any other country, the yield of the American mines and the disposition of their product is of great interest to our people, and closely watched in other parts of the world.

#### THE PRODUCTION OF THE PRECIOUS METALS IN THE UNITED STATES.

As will be seen, the production of 1879 is considerably less than that of the preceding year. It has resulted from the diminished yield of the mines of the Comstock Lode. A depth has been reached 1,000 feet below the bed of the Carson River, and impediments are encountered from accumulations of water and from the oppressive temperature, which discourage and have retarded vertical exploration. This has caused a falling off in the total yield of the State, from the production of the preceding year, which, as officially reported in 1878, was \$47,076,863 of



both gold and silver, but which for 1879, J. F. Hollock, the State controller, reports to be only \$19,305,473.97.

The hope of finding similar deposits or a continuation of the large ore-body of the "bonanza mines" in the lower levels of contiguous mines has not as yet been realized.

Although the production of Nevada will be large and continuous for many years, it does not appear probable that the mines of that State will make such enormous contributions to the mineral wealth of the country as they have in previous years.

This decrease has been in part compensated by the results of the more thorough exploration of the mining regions of the Rocky Mountains, especially in Central and Southern Colorado. The production of that State was at least six millions greater in the last than in the preceding year, and will probably furnish an undiminished, if not increased, amount of silver in the future.

While in Colorado inspecting the Denver Mint, I took occasion to visit the mining region in the vicinity of Leadville, and to obtain information bearing upon the question of its present and future production.

There is no doubt of mineral deposits of great richness existing in that portion of the State, which are easily mined, and from which the ore is extracted at comparatively little expense. The deposits extend over a very large area.

The smelters at and in the vicinity of Leadville have reported to this office the production of about  $4\frac{1}{2}$  million dollars from the commencement of smelting in the latter part of 1878 to August, 1879, and it is estimated that in addition to this product upwards of  $5\frac{1}{4}$  million dollars' worth of high-grade ore have been shipped to other works for treatment, making a total production for the Leadville district of about  $9\frac{3}{4}$  million dollars since the discovery of the carbonates, about two years ago.

The rate of the out-turn of the mines is not only likely to continue for some time, but to increase as the mines are further developed, additional smelting-works put in operation, and increased facilities for shipping extended to that section.

After careful inquiry and consideration of the yield of different localities and mines in the United States, I have estimated the total production of the precious metals in the country for the fiscal year 1879 at \$79,712,000, of which \$38,900,000 was gold and \$40,812,000 silver. As nearly as can be ascertained from official reports and other reliable sources, the production was derived from the mines of the States and Territories as follows:

State or Territory.	Gold.	Silver.	Total.
California .....	\$17,000,000	\$2,400,000	\$20,000,000
Nevada .....	9,000,000	12,500,000	21,500,000
Colorado .....	3,225,000	11,700,000	14,925,000
Montana .....	2,500,000	2,225,000	4,725,000
Idaho .....	1,200,000	650,000	1,850,000
Utah .....	575,000	6,250,000	6,825,000
Arizona .....	800,000	3,550,000	4,350,000
New Mexico .....	125,000	600,000	725,000
Oregon .....	1,150,000	28,000	1,170,000
Washington .....	75,000	20,000	95,000
Dakota .....	2,420,000	10,000	2,430,000
Michigan (Lake Superior) .....	.....	780,000	780,000
North Carolina .....	90,000	.....	90,000
Georgia .....	90,000	.....	90,000
Other sources .....	50,000	47,000	97,000
<b>Total .....</b>	<b>38,900,000</b>	<b>40,812,000</b>	<b>79,712,000</b>

In the report of the Director of the Mint for 1874, a table was published which had been prepared by R. W. Raymond, United States Commissioner of Mining Statistics, showing the production of gold and silver in this country from 1848 to 1873. I am unable at present to review the data from which this table was prepared or to vouch for its accuracy, but it seems to be desirable that these estimates should be brought up to date.

The following is an approximate estimate of the domestic production for the last six years. It is condensed from a table appended to this report, and embraces the entire product of each year, unless a larger amount has been used in the arts or bullion has been clandestinely exported, of which there is no proof or reasonable suspicion:

*Domestic production of gold and silver, 1874 to 1879.*

Fiscal year ending June 30.	Gold.	Silver.	Total.
1874	\$33,490,902	\$37,324,594	\$70,815,496
1875	33,467,856	31,727,560	65,195,416
1876	39,929,166	38,783,016	78,712,182
1877	40,897,390	39,793,573	80,690,963
1878	51,205,360	45,281,885	96,487,245
1879	38,899,858	40,812,133	79,711,990
	243,891,532	233,723,290	477,613,792

These amounts were ascertained by adding to the amount of domestic bullion purchased or deposited for coinage during the year the amount of domestic bullion exported, consumed in the arts and manufactures, and stock of bullion remaining in the country.

The value of the gold and silver contained in argentiferous ores exported in the last six years has not been included in this estimate. Their total gross value for the whole period was little more than a million dollars, and it is impossible to ascertain how much of this valuation was gold, silver, lead, or copper; and shipments have gradually decreased until, during the fiscal year ended June 30, 1879, they amounted only to \$148,195. The statistics of the production of Germany, France, and England include these ores in the reports of the value of gold and silver produced in those countries from Spanish and American ores.

DISPOSITION OF DOMESTIC PRODUCTION.

A reliable test of the accuracy of estimates of total production is their agreement with the statistics which show the disposition annually made of the precious metals.

Nearly all of the gold and a large portion of the silver produced in the United States during the last year was coined at the mints or used in domestic manufactures, arts, and ornamentation. The surplus was exported to non-producing countries.

The amount annually used for coinage and exported is readily ascertained. The Mint records show the one and the customs returns the other. Foreign coin and bullion are now reported separately from domestic. But to obtain accurate statistics of the amount annually consumed by abrasion or loss of coin, and used in the arts, manufactures, and ornamentation is a very difficult task. The annual consumption or appropriation of the precious metals for the latter purpose was placed by Humboldt, in 1803, at \$6,000,000 for France and \$23,000,000 for Europe. Mr. William Jacob, in 1831, from a careful review of the various occu-

pations using gold and silver in manufactures and ornamentation, made the annual consumption in the British Kingdom, for other purposes than coin, to be gold of the value of \$8,183,000, and silver \$4,100,000. His conclusions for Europe, then, were that gold and silver were thus annually used to the value of, in—

Great Britain .....	\$12,285,000
France .....	6,000,000
Switzerland.....	1,750,000
The remaining countries.....	8,025,000
	<hr/> 28 060,000

He estimated that the United States consumed one-twentieth part as much as Europe. He placed the consumption for these purposes in both Europe and America, at \$29,466,250, leaving for coinage as money but 10½ millions annually of the 40 millions then regarded as the world's annual production.

The estimates of the amount of gold and silver annually consumed in the United States in the manufactures, the arts, and ornamentation at the present time widely vary.

In computations heretofore made by this office it has been placed at \$5,000,000, and at the highest \$6,000,000, while in the report of the Silver Commission it was given as a conjecture that the annual consumption of silver was \$10,000,000 in the United States for the arts and manufacturing purposes and \$50,000,000 in all countries outside of Asia.

In order to arrive at an approximate estimate of the consumption of gold and silver in the United States, I directed an examination to be made at the mints and assay-offices manufacturing fine bars, of their books for the last six years, and a report to be made of the amount of fine bars of gold and silver prepared and issued for manufacturing purposes.

The reports show that during the above period of time there were issued for manufacturing purposes \$21,879,040 of gold, and \$22,250,283 of silver, being an annual average consumption of gold bullion obtained from the New York assay-office alone of \$3,646,506, and \$3,708,380 of silver bullion.

The amount paid out at that office for these purposes during the last year was \$2,901,844 of gold, and \$4,482,975 of silver.

Fully one-half of the total bullion product of the country is parted and refined by private enterprise, and a considerable portion of the gold and silver used by manufacturers comes from such refineries. I have assumed that one-fourth of the total consumption for this purpose is of bullion other than New York assay-office bars. This is a moderate estimate for the additional amount, including, as it does, all supplies from private sources and refineries and bars issued by the coinage mints and by the other assay-offices.

I have attempted to secure further statistics of the consumption in the United States by addressing circular-letters to all manufacturers whose addresses I could obtain, who consume gold or silver in the preparation of chemicals and in the manufacture of jewelry, watch-cases, and other solid or plated wares. The circular referred to requested that they would specify the various forms of the metals used, whether United States coin, foreign coin, and old manufactured articles reworked or bullion. The replies that have been received, while incomplete as to the total consumption, are valuable in exhibiting the proportion of the different specified forms used, and also show that the gross amount would be in excess of estimates previously made.

tion reported is as follows:

	United States coin.	Old manufactured articles, including Foreign coin.	Bullion Bars and Native grains.	Total.
.....	\$1,473,259	\$386,160	\$3,989,081	\$5,848,500
.....	179,905	144,239	2,288,588	2,612,733
.....	1,653,164	530,399	6,277,669	8,461,233

essed, 1,401 replies were received; and of the latter, ring and consuming gold and silver, and reported leaving 2,105 not heard from. It is obvious that office are not in excess of what probably would have the actual amount of the precious metals used, had turns been made.

ormation obtained, it may be safely assumed that tion in the United States of precious metals in all seven million dollars of gold and five million dollars total of twelve million dollars; and fuller statistics amount thus used. In estimating the amount of appropriated annually for this use, I have added ue of such bars furnished from the New York assay- he following consumption for the last fiscal year:

and silver, \$5,977,300; and an average annual con- t six years, of gold, \$4,458,104, and silver, \$4,854,527. xport and consumption of bullion produced in the (including old plate and coin) for the last and five pears, from data received, to be as follows:

## GOLD.

	Coinage.	Used in arts and manu- factures.	Exported (re- ported by Bureau of Statistics).	Total.
.....	\$25,034,031	\$4,578,328	\$3,878,543	\$33,490,902
.....	25,851,983	5,382,098	2,233,775	33,467,856
.....	23,887,086	4,153,184	1,888,896	30,929,166
.....	42,125,662	3,687,192	1,084,536	46,897,390
.....	45,622,340	5,078,701	205,319	51,206,360
.....	35,005,939	3,809,125	24,774	38,839,838

## SILVER.

	Coinage.	Used in arts and manu- factures.	Exported (re- ported by Bureau of Statistics.)	Total.
.....	\$5,764,538	\$4,406,560	\$27,153,496	\$37,324,594
.....	10,291,805	4,237,841	17,197,914	31,727,560
.....	19,730,654	3,812,018	15,240,344	38,783,016
.....	24,543,939	3,774,240	11,475,304	39,793,573
.....	25,036,188	5,210,152	15,035,045	45,281,385
.....	22,951,768	5,977,300	11,823,064	40,812,133

## COIN CIRCULATION OF THE UNITED STATES.

In preparing estimates of the amount of coin in the country, we have official records of the coinage and of the imports and exports of coin; we also have approximate returns of the amount of coin melted for manufacturing purposes. To complete the inquiry as to the coin circulation of the country, it is necessary to consider what amount of coin, foreign and domestic, may have been personally brought by immigrants, and, therefore, not reported by the Custom House. The secretary to the Commissioners of Emigration for the State of New York, H. J. Jackson, esq., states that 79,801 immigrants during the year 1878 landed at Castle Garden, and exchanged there \$520,000 of foreign coin. The average would be \$6.50 per individual, or \$32.50 per family. Assuming that an equally large amount of American coin, obtained by exchange at home, would be brought by immigrants, and also that a small amount of foreign coin not exchanged at New York would be taken by them to their place of destination, fifteen dollars may be estimated as the average sum brought by each immigrant and not reported in the custom-house returns.

The larger estimates heretofore made do not seem to distinguish between cash represented by drafts and bank bills, or even personal assets, all of which must be disregarded in statistics of coin importation; an official statement of the average "cash means" is too indefinite.

From the foregoing data I estimated in 1874 (Congressional Record, vol. 2, p. 2746) that the amount of coin in the country at the commencement of the calendar year 1873 was reduced to \$132,000,000, and stood at its close at \$143,000,000. This nearly coincides with the estimates of several statisticians made for the same period. The Director of the Mint in his first annual Report stated the coin then in the country (November 1, 1873,) to be about \$140,000,000, of which \$5,000,000 was silver.

The difference between my estimate and that made by the Director of the Mint is comparatively slight and may be accounted for by the difference in dates. I have thought it proper to take the latter as the basis for continuing the estimates, year by year, to the present time.

## GOLD.

Fiscal year ending June 30—	Coinage, less coin deposited for re-coinage.	Net export or import of coin.	Gain or loss during the year.	Estimated amount of gold coin in the country at the close of the year.
1873.....				\$133,000,000
1874.....	\$34,833,411	\$7,620,605	*\$27,232,746	162,232,746
1875.....	30,727,862	52,628,351	121,000,480	140,832,257
1876.....	35,649,931	22,161,121	*13,161,121	153,493,373
1877.....	41,609,696	1,312,268	*40,387,428	193,680,806
1878.....	51,181,467	12,397,267	*53,548,764	247,420,570
1879.....	39,200,009	228,881	*39,061,128	\$86,490,693



SILVER.

Item 39—	Coinage less coin deposited for re-coinage.	Net export or im- port of coin.	Gain or loss during the year.	Estimated amount of silver coin in the country at the close of the year.
	\$5,713,334	\$1,950,117	*\$3,763,217	\$5,000,000
	9,895,476	2,033,246	*7,862,230	8,763,217
	18,980,405	2,187,118	*15,793,287	16,625,447
	27,275,958	7,837,186	*19,438,772	32,418,734
	27,941,127	1,578,695	*28,514,821	51,837,506
	26,518,612	1,580,015	*31,608,637	80,352,328
				112,050,985

Gain. Loss. Net import.

Immigrants during the six years exceeded the emigration at \$15 per capita brought upon their persons but doubtless the loss from abrasion, use in manufacture equaled the gain from this source, for there has been an office from manufacturers a consumption of about one coin per annum, the coin used by others not probably swell this amount to \$2,000,000, or a total for \$2,000,000; the one has, therefore, been taken as an estimate and neither taken into consideration in preparing the

During the last six years there was an increase of gold of \$151,490,698, and of silver coin \$107,050,985, of the standard silver dollars, \$8,500,000 trade-dollars, and subsidiary coin. The amount of subsidiary coin exceeds the loss during the period referred to, and is accounted for by large sums have returned to us from abroad. From the records of the customs it appears that there has been since July 1, 1877, of about ten millions United States which about 6,500,000 was subsidiary and over \$10,000,000.

which this coin was received and the respective amounts are given in a table accompanying this report.

of gold and silver coin in the country on the 30th of September above computation :

.....	\$286,490,698
.....	112,050,985
.....	398,541,683

the last fiscal year and up to November 1, the amount of gold and silver coin imported at New York alone have been :

.....	\$7,141,164
.....	32,110,756
.....	12,895,254
.....	52,147,174

period there have been coined of domestic bullion \$9,405,370 in silver, which, added to the States gold coin imported, makes a total increase in the country since July 1 of \$28,665,169. This, added to the amount of gold and silver coin in the country at the end of the fiscal year, gives a total of \$427,206,852 of silver, a total of \$427,206,852, per capita of coin.

This exceeds by \$86,206,852 the coin in the country at any other period, the highest previously having been in 1863, \$341,000,000, and next to that in 1857, \$315,000,000.

In addition to the stock of gold and silver coin there was, on October 31, in the mints and the New York assay-office, bullion awaiting coinage to the amount of \$49,931,035 of gold and \$4,553,182 of silver, which, added to the coin, would give as the amount of coin and bullion in the country October 31, 1879, \$355,681,532 of gold and \$126,009,537 of silver, a total of \$481,691,069.

Should the unprecedented flow of gold continue from foreign countries, unchecked by its reaction upon prices here and abroad, the metallic circulation of the country at the end of this fiscal year will have swollen to over \$600,000,000.

Such result, however, is not to be anticipated, nor, so long as our own mines supply in abundance the precious metals, is it desirable that the needful amount of metallic circulation should be obtained by the depletion of European reserves, to replenish which, at the first opportunity, the gold will be withdrawn as rapidly as it has been furnished, thus causing violent disturbance of monetary values, and uncertainty and embarrassment in commercial transactions.

Of the specie circulation on the 1st of November, the Comptroller of the Currency and the United States Treasurer report that \$198,859,332.16 were held by the national banks and the Treasury, leaving \$162,200,108.60 of gold and \$66,147,411.24 of silver in use by individuals, corporations, and private or State banking and other institutions.

The gold and silver was held and used as follows:

	Gold.	Silver.		Total.
		Legal tender.	Subsidiary.	
Treasury .....	\$119,920,670 40	\$32,532,702 00	\$17,856,898 76	\$170,310,271 16
National banks .....	23,628,718 00	.....	*4,919,343 00	28,548,061 00
Other circulation .....	162,200,108 60	12,673,498 00	153,473,913 24	228,347,519 84
Total .....	305,750,497 00	45,206,200 00	176,250,155 00	427,206,852 00

\* Including standard dollars.

† Including trade dollars.

#### MONETARY STATISTICS OF FOREIGN COUNTRIES.

Replies have been received from a number of foreign countries to which inquiries were addressed respecting their coin and paper circulation, production of precious metals, coinage, movements of gold and silver, and amounts consumed in the arts and manufactures. The documents containing these statistics will be found in the appendix. \*

Much of the information communicated is very valuable, and the representatives of the United States abroad and government officials or those nations from which replies were received are entitled to thankful acknowledgments for their promptness in responding to the inquiries.

A brief review and abstract of the interesting and useful facts elicited may be of advantage, and are here presented in connection with reliable data gathered from other authorities.

*Great Britain.*—The coinage of Great Britain during the calendar year 1878 was as follows:

Gold .....	£2, 132, 245 = \$10, 376, 571
Silver .....	614, 426 = 2, 990, 104

\* The documents here referred to are omitted for want of space, but they are printed in the pamphlet copies of the Director's report.

And for the last ten years (1869 to 1878 inclusive):

Gold.....	£47,899,263=	\$233,101,763
Silver .....	6,182,154=	30,085,452

The annual average coinage for the last ten years has been about \$23,000,000 of gold and \$3,000,000 of silver.

In the gold coinage for the years 1877 and 1878 of £3,230,986 nearly one-half, £1,557,500, was light gold coin sent from the Bank of England for recoinage.

Of silver coined at the mint during the year 1878 only £215,500 went to the Bank of England—the remainder going to Scotland, Ireland, and the colonies.

The amount of silver coin issued by the Bank of England to the public during the same year was £187,000, while the amount of worn silver coin withdrawn by the bank was £220,000. The withdrawals of worn silver coin by the Bank of England for recoinage during the last three years exceeded the value of the issues of silver coin to the public by that bank by £350,000, so that the silver coin in circulation in England and Wales alone was less by £350,000 (\$1,703,275) at the end of 1878 than at the beginning of 1876.

Accounts kept of the waste on £8,186,451 of gold coinage, completed in 1878, showed a loss of £543.6 per million, or .005436 per cent.; of which coinage £4,073,756, or 65 per cent., was light gold coin.

An examination of the last and preceding reports made by C. W. Fremantle, deputy master of the mint, shows that since 1860 silver has been coined of the nominal value of £9,140,094, and that during that period £2,951,120 of worn silver coin had been withdrawn and recoined, making a net increase in the silver coinage of £6,188,974, and a recoinage of 32.3 per cent. of the silver coined during that period.

The total amount of silver coined at the British mint from 1816 to 1879 was £26,469,248, of which £13,573,900 was coined prior to 1848, since which the total amount of worn silver coin withdrawn was £3,983,338=\$19,384,914.

The gold coinage since 1816 has been £241,936,664=\$1,177,375,042.

Assuming the specie circulation of Great Britain to have been, as estimated by Mr. Fremantle, December 31, 1875, £118,560,000 of gold and £19,000,000 of silver, adding the coinage for the fiscal years 1876, 1877, and 1878 of gold £7,943,185, silver £1,257,300, deducting light coin withdrawn and recoined for the same period, gold £2,196,075, silver £884,915, and adding the net excess of the imports of British gold coin over the exports for the same years, £2,810,951, and deducting the net excess of exports of silver coin over imports, £184,844, would make the circulation of specie on the first of the present year, gold \$618,620,043, silver \$93,376,169. Total, \$711,996,212.

*Germany.*—The adoption by the German Empire of gold as its monetary standard, in lieu of silver previously recognized and coined by the individual States, and the withdrawal and sale of the existing silver coinage, inaugurated a financial revolution which has attracted the general attention of all civilized nations, and unsettled values in almost every habitable part of the globe.

This action was apparently the primal cause of the recent unusual fluctuations in the relative values of gold and silver, and of the comparative depreciation of the latter, which has driven other European nations to close their mints against silver, and alarmed every country having a bimetallic system.

Nor could it have been otherwise, for within the last six years the new



German coinage has drawn from other nations and absorbed gold to the extent of \$382,411,368. Germany has not only ceased to be a customer for silver, but during the same period upon a market already fully supplied by increasing production, has thrown of her own stock of silver, at variable times and in variable quantities, a total amount up to May last of \$149,702,000, while there remain about \$113,288,000 of the old silver coinage not yet withdrawn, the fear of which still depresses the silver market.

The people of Germany have been sufferers in common with other nations from this general unsettling of values. The state itself in the change of its monetary standard, as yet but partially effected, has met a direct and considerable loss in the sale of the silver depreciated by its action.

The government sales of silver were suspended on May 19 last, and from late dispatches received from Mr. White, United States minister to Germany (in full in appendix), it appears that grave doubts exist in the Reichstag as to the wisdom and policy of the changes already made and of the withdrawal and sale of silver thalers remaining in circulation.

Herr Von Drehend, president of the Reichsbank, stated in debate in last June, that the loss from the withdrawal and sale of silver coin had already amounted to \$17,136,000, and that a further loss of from 19 to 23 million dollars would probably ensue by continuing the withdrawal and sale. He further said, in substance, that while being used to formidable calculations, and understanding well that reforms cannot be made in coinage without heavy sacrifices, he was startled by these figures, and believed there were but few present who did not share his feelings in that respect, and that he considered it to be his duty to strongly recommend to the imperial chancellor a suspension of the sale of silver, and that a real service would be done to the country and the whole world if no more silver was allowed to be sold and the silver market permanently saved from the fears of German silver.

From the report made to the United States minister on the 30th of August, 1879, it appears that the total gold coinage of Germany from 1871 to June 1, 1879, amounted to \$404,057,106, and subsidiary silver to \$101,851,957, and that for 1878 the gold coinage had been \$29,742,879, and the nominal value of the silver coinage was \$1,562,463.

The specie circulation at the close of the year 1878 amounted to \$328,168,462 of gold and \$214,939,957 of silver, of which \$113,288,000 were in pieces of the old coinage, making a total specie circulation of \$543,108,419.

At the end of May, 1879, the banks held in specie \$147,902,482.

The paper circulation of Germany amounts to \$229,596,234, of which \$38,817,300 were of government issue and \$190,778,934 bank circulation.

The production of the mines since 1875 has been as follows :

	Gold.	Silver.
1876 .....	281 Kilo.	139,778 Kilo.
1877 .....	308 "	147,612 "
1878 .....	308 "	106,911 "

*The Scandinavian countries.*—The Scandinavian states—Norway, Sweden, and Denmark—have entered into a union similar to the Latin Union, gold being the standard and silver subsidiary.

Since this union was effected under the treaty of October 18, 1872, these countries have been engaged in changing their metallic currency from the single silver to the single gold standard.

The coinage of the countries named in pursuance of the Scandinavian monetary treaty amounted on July 1, 1878, to—

Countries.	Gold.		Silver.		Total.	
	Crowns.	Dollars.	Crowns.	Dollars.	Crowns.	Dollars.
Denmark .....	34,754,646	9,314,233	18,148,229	4,863,724	52,902,869	14,177,957
Sweden .....	31,086,010	8,331,290	11,643,553	3,120,471	42,730,463	11,451,761
Norway .....	9,436,650	2,529,022	4,520,000	1,211,360	13,956,650	3,740,382
Total .....	75,278,200	20,174,545	34,311,782	9,195,555	109,589,982	29,370,100

The net imports of gold into Denmark from 1871 to 1875 amounted to \$11,879,515, while the net exports of silver for the same period amounted to \$2,823,547.

Denmark sold, during the three years ended June 30, 1876, silver amounting to \$4,117,552. In changing from the silver to the gold standard Denmark has absorbed in five years gold to the value of \$11,879,515 and has disposed of, by export, silver of the value of \$2,823,547.

The circulation of the Scandinavian states has been estimated to be as follows:

*Denmark.*

Paper circulation .....	\$18,900,000
Gold circulation, including reserve in banks .....	20,000,000
Silver circulation, subsidiary .....	4,863,000
Total .....	43,763,000

*Norway.*

Paper circulation .....	10,300,000
Gold circulation, including reserve in banks .....	10,000,000
Silver circulation, subsidiary .....	1,200,000
Total .....	21,500,000

*Sweden.*

Paper circulation .....	11,680,000
Gold circulation, including reserve in banks .....	15,000,000
Silver circulation, subsidiary .....	3,120,000
Total .....	29,800,000

*The Netherlands.*—Holland, like the Scandinavian countries, has been changing from the single silver to the single gold standard.

The change began on the 1st of July, 1875. The imports of gold during the six years 1873 to 1878 exceeded the exports by \$20,282,911 and the imports of silver exceeded the exports by \$8,160,808.

The coinage of gold for the two years 1873 and 1874, prior to the change of standard, amounted to only \$195,400, while the coinage of silver during the same period amounted to \$1,913,722.

The coinage of gold during the four years 1875 to 1878, since the change of standard, amounted to \$23,666,601, while the coinage of silver during the same years amounted to only \$180,209.

During the year 1878 no standard gold coins were struck at the mint, but the coinage of gold consisted of the commercial pieces (ducats) of the value of \$199,250.

The circulation of Holland is estimated to be as follows:

Paper circulation .....	\$73,230,000
Gold circulation, including bank reserve .....	20,000,000
Silver circulation .....	57,600,000
Silver circulation, subsidiary .....	300,000

Total ..... 151,130,000

Of the specie circulation nearly fifty millions is held by banks.

*The circulation of France and the Latin Union.*—An examination ordered in France and Belgium to ascertain the character, date of coinage, number and value of coin in circulation in those countries near the close of the year 1878, disclosed that 19,511 public offices in France held 1,009,559 pieces of gold coins valued at \$3,257,596 and 1,213,406 silver five-franc pieces of an approximate value of \$1,213,000.

In Belgium similar inquiries were made in regard to coins received in payment at the National Bank, its agencies, the state treasurer's at Brussels, and at all of the public offices of account.

From an analysis of the results of these examinations, it was estimated in the annex to the report made by the French commissioners to the Chamber of Deputies, that the number of five-franc pieces in circulation in the states of the Latin Union maintaining specie payments was as follows:

France.....	380,000,000
Belgium.....	55,000,000
Switzerland.....	30,000,000
Total.....	465,000,000

**The French commissioners in conclusion say:**

Such are the results reached by a careful examination. By these data the general circulation would be 5-franc silver pieces in circulation in the three states of the Union, 2,325 millions of francs. Divisionary silver with the afflux of Italian coins, 375 millions of francs. Gold coins, double of 5-franc pieces, 4,650 millions of francs; total, 7,350 millions of francs.

It seems to have been assumed that the gold circulation of France and the other States of the Union was double that of silver, and the amount of gold coin, \$3,257,596, found in the public offices in France, compared with the value of the five-franc pieces found in the same offices, if a proper basis for estimating the total circulation, would indicate a proportion of gold more than double that of silver.

But the proportion of gold and silver coins in circulation may be very different from the proportion of those coins in the Treasury. There were in the Bank of France October 5, 1878, \$226,700,000 of gold, and \$202,500,000 of silver, which would indicate not much more gold than silver in circulation. An active circulation may consist of silver rather than gold.

The Belgium investigation which was based upon the character and number of coins used in making payments showed a much larger proportion of silver than of gold. An examination of coins received in payment, instead of coins found in reserves and public offices, might have given different results in France.

While doubting the accuracy of the exhibit, in default of better data, the estimates given are accepted, and the circulation of France placed as follows:

	France.	Dollars.
Paper.....	2,418,419,689	466,755,000
Gold.....	3,800,000,000	733,400,000
Silver, unlimited tender.....	1,900,000,000	366,700,000
Silver, limited tender.....	306,450,000	59,144,850
Total.....	8,424,869,689	=1,625,999,850

The estimate of the specie in circulation in Switzerland furnished by the Vice-Chancellor is given at \$20,000,000, which, in addition to that in banks, \$12,000,000, would make the total specie circulation but \$32,000,000. This estimate is probably much too low, while that previously given submitted in the annex to the French report appears excessive, yet, as the

latter was the basis for official action for the respective governments, if rejected for one country it should be for all. I have, therefore, in compiling the table of circulation given in the appendix, used the calculation of the report to the French chamber of Deputies.

The remaining states of the Latin Union, Greece and Italy, have a forced paper circulation.

In Greece the paper circulation amounts to \$12,890,000, issued by the national and Ionian banks, while the reserve of specie held by these banks amounts to \$4,500,000. There is no mint in Greece, and its minor and subsidiary coins are supplied by the other states of the Latin Union.

The paper circulation of Italy amounts to \$135,000,000, while the specie reserve in banks is only \$17,000,000.

*Austria.*—The dispatches received from Minister Kasson are of great value, as they show that efforts are being made by this empire to return to a specie basis and maintain the integrity of its paper circulation, while preserving, as far as possible, a coinage and circulation of gold and silver.

The coinage during the year amounted to \$2,600,563 of gold, and \$13,906,258 of silver.

The paper circulation was \$322,938,854.

During the year the mines of Austro-Hungary produced 543½ ounces of gold, and 935,243½ ounces of silver.

*Russia.*—The information received through the Legation of the United States at St. Petersburg shows that the authorized paper circulation of the Bank of Russia and its branches amounted in January last to \$587,907,562, which has not materially changed to the present time.

The specie reserve held by the banks amounted on the 12th of June last to \$110,500,000, all of which, with the exception of about three millions of dollars, was in gold.

There are no official data in relation to the amount of gold and silver in circulation. There was produced from the mines of Russia in 1877: gold, 2,515 poods; silver, 1,202 poods; total, 3,717 poods; equal in weight to about 134,225 United States pounds.

Austria, Russia, Italy, and Greece, although their banks hold considerable specie, use for circulation depreciated bank-notes, and to resume specie payment would require large increase of gold or silver.

Their respective circulations, as far as attainable, are presented with those of other countries in a table accompanying this report.

Upon the estimate of 30 per cent. of coin reserve to paper issued, the amount required to resume and maintain specie payments over and above the present coin reserve of the banks, and not estimating the additional amount needed for general circulation, would be as follows:

	Paper circulation.	Bank reserve.	Required bank reserve.	Deficiency.
<i>Austria</i> .....	\$322,938,854	\$70,560,000	\$96,881,656	\$26,321,656
<i>Russia</i> .....	587,907,562	110,500,000	176,372,268	65,872,268
<i>Italy</i> .....	135,000,000	17,000,000	40,500,000	23,500,000
<i>Greece</i> .....	12,890,000	4,500,000	3,867,000	.....

No returns have been received from Spain, Portugal, and Turkey.

Portugal adopted the gold standard in 1851, while Spain has practically conformed her monetary system to that of the Latin Union.

The value of the gold coined in Spain from 1861 to 1875, inclusive, was \$140,291,716, and the value of the silver, \$48,425,615. The value of the gold coined in Portugal from 1855 to 1874, inclusive, was \$5,116,470, and of the silver, \$8,748,471.

The circulation of Spain and Portugal has been estimated to be as follows :

	Paper.	Specie, including bank reserves.
Spain.....	\$33,795,000	\$200,000,000
Portugal.....	20,529,000	85,000,000

Turkey has a greatly depreciated paper circulation, estimated at about \$100,000,000.

*Africa.*—But little information has been received from African countries. Two of them, West Africa and Algiers, conform their standards and circulations to the European nations of which they are dependencies, Great Britain and France.

There has been considerable gold imported into West Africa, the average amount during the last three years annually exceeding the exports \$1,250,000.

The imports of gold in fifty-four years were \$38,727,620, and the exports \$10,309,425.

The imports of silver for the same time were \$2,683,200 and the exports \$819,120.

Algiers has a bank circulation reported in July to be \$8,350,000, with bank reserves of \$3,270,000 in gold, and 2,623,000 in silver, making a total of \$5,893,000. The amount of coin in circulation was \$9,000,000.

In Morocco, no gold coins have been struck for 20 years.

The export of gold dust from 1871 to 1875 was \$8,900, and \$12,500 in silver coin have been exported annually.

*Canada.*—All of the colonies and dependencies of the British Empire, except the Asiatic, are supplied with silver coin by England. Canada has no mint, but silver coins of the denominations of twenty-five, ten, and five cents are provided by the home government. The gold coins in circulation consist principally of British coins.

Notes similar to United States notes are issued by the Dominion, the total amount of which in circulation on the 30th of April last was \$10,674,850.14. In addition to Dominion notes, the banks issue notes which amounted at the same date to \$18,372,892.45, while the total specie held by the banks amounted to \$6,291,285.48.

*Mexico.*—The circulation of this country consists principally of silver, bank notes being issued but by a single institution, and too inconsiderable to be noticed.

Both gold and silver are coined and exported in coin and bullion, although charged with an export duty of 5 per cent.

The coinage for the year 1878 was—

Of gold .....	\$689,688
Of silver .....	22,112,680

and for 9½ years has been \$8,456,601 gold and \$193,966,699 silver, averaging annually a coinage of nearly \$1,000,000 of the former and \$20,000,000 of the latter. Probably the average production has been about the same amount.

The exports for three years ending 1878 were gold \$6,388,535, silver \$58,373,039; indicating at this time a greater export of gold than the probable annual production, as estimated from the coinage.

*Central and South America.*—The information received in relation to the States of Central and South America is very meager, with the exception of Colombia.

In regard to the latter, Mr. Ernest Dichman, the United States minister resident, has furnished very complete information and tables of coinage and of imports and exports.

The bank-note circulation of Colombia at the close of the year 1878 amounted to \$1,895,343, of which the banks held \$362,047, together with specie reserves of about \$200,000 in gold and \$1,500,000 in silver. The total specie circulation of the country is reported as \$1,700,900, of which about \$4,000,000 is silver.

The production of the mines of Colombia is about \$1,000,000 a year in silver and varies between 3 and 5 millions a year in gold.

The coinage of the mints for the ten years ended August 31, 1878, was, gold, \$3,026,499; silver, \$2,195,591.

The exports of gold and silver during the same period amounted to \$19,775,210, while the imports of the same are reported as 79,780<sup>34</sup> kilograms; but as the gold and silver are not separated, the value cannot be ascertained.

The circulation of Venezuela consists principally of foreign coin, and in Peru paper has driven specie out of circulation. Its paper soles were quoted last July at 53 per cent. discount. The paper circulation is estimated at \$13,098,820.

No report has been received from Brazil, the only one of the South American States which adheres to the gold standard. Its paper circulation is estimated at \$91,000,000.

*The Hawaiian Islands.*—The amount of specie in circulation in the Sandwich Islands is reported by Mr. Morton, the chargé d'affaires *ad interim* at Honolulu, at \$800,000 in gold and \$500,000 in silver.

There is no paper currency, but certificates of deposit are issued by the treasury for coin deposited.

*Australia.*—As Australia is second only to the United States, of all the countries on the globe, in the production of gold, its monetary statistics are of great interest.

Mr. O. M. Spencer, the United States consul-general at Melbourne, has communicated information of importance in relation to the production of the precious metals and the circulation of the banks of Australia later than any officially published in this country.

The gold mines of Australia, like those of the United States, are yielding a diminished annual supply, the amount for 1877 being only about two-thirds of the production of 1873, and a still further reduction is reported in the yield for 1878.

The production for 1877 compares with the production for 1873 as follows:

	Ounces.	Value.
1873 .....	2,243,372	\$42,779,908
1877 .....	1,519,548	29,018,223
Decrease .....	723,824	13,761,685

The net exports of gold, although diminished, have not lessened in a corresponding ratio, owing probably to the large stock of gold in the country.

The circulation of bank notes for 2½ millions of people amounts to \$21,604,936, for which the banks hold a specie reserve of \$40,765,131.

*Japan.*—The Japanese Government, after some years' efforts to maintain a gold standard, on the 25th of May, 1878, made the silver trade dollar of 420 grains of their currency a legal tender in payment of all public and private debts. Being four grains heavier than the Mexican dollar, it was supposed, as was at one time believed in this country concerning our trade dollar of the same weight exported to China, that it would drive the Mexican dollar out of circulation.

The experience in regard to both the American and Japanese trade

dollars has been the same. Their bullion value being greater than that of the coin they were intended to supplant, instead of circulating to any considerable extent, they were melted and disposed of as bullion at their higher value.

In November the coinage of the Japanese trade dollar was suspended, and in its stead the coinage of the silver yen of 416 grains was commenced and has been since continued.

The coinage during the year ending June 30, 1878, was yen of gold 357,578 and of silver 4,310,345.

The total coinage of the mint at Osaka up to the 30th of June, 1878, is yen 82,785,397.63.

The exportation of coin and bullion from Japan from 1871 to 1878 has exceeded the importation by \$40,000,000, so that the country has comparatively but little coin in circulation; its paper having fallen from 8 per cent discount against gold in 1877 to 13 per cent discount against silver in October, 1878.

The paper circulation amounts to about \$143,000,000.

*Asia.*—Nothing has been received from the commercial agents or representatives of our government in India, and nothing of importance from any other Asiatic country. The absorption by those countries of the precious metals has been large and uninterrupted, and as the immense resources of India are further developed the influx and absorption of treasure must continue. Recent statistics of the import of treasure to Eastern nations, and especially to India, are presented in the appendix.

From 1866 to 1878 the value of the merchandise exports of India was.. \$2,963,199,854  
Merchandise imports ..... 1,803,536,003

Excess of merchandise exports over imports ..... \$1,159,663,851  
Excess of treasure imports over exports ..... 453,249,202

Leaving a balance of exports over imports of..... 707,414,649

Thus it appears that for the last twelve years the average annual import of treasure into India was \$45,500,000, and the average export for the same period \$7,700,000, making the average yearly gain of treasure \$38,000,000, by far the larger portion of which was in silver.

From July 1, 1873, to September 30, 1879, the exports of silver from the United States to China amounted to \$59,361,557, and during the same period about \$41,000,000 was exported from Europe to that country.

*Asia*, with nearly double the population of Europe and America combined, depends almost exclusively upon the Western Continent for its supply of the precious metals. The annual import into Asia and Egypt of silver for the last thirty years has averaged \$40,000,000.

At the beginning of the century, according to Humboldt, they took twenty-five out of forty-three millions of silver annually produced, and the remaining stock was insufficient to supply the requirements of silver for manufactures and change money. England in 1816, and the United States in 1853, depreciated their subsidiary silver coins, not on account of the excess, but from scarcity of silver and impossibility otherwise to retain their silver coins from export to the East. There is no reason to apprehend that the demand of India and China for silver will decline. During the last twenty-five years India has taken an average of \$38,000,000, and China \$9,000,000, making the average yearly absorption of silver by those nations \$47,000,000. It is not unreasonable to expect that their future requirements will fully equal that amount.

The silver coinage of India from 1835 to 1876 was equivalent to \$958,769,275, an annual average appropriation of silver for coinage during forty-two years of \$22,827,839, leaving \$15,000,000 of the total average import for ornamentation and other purposes.

## SUMMARY OF THE STATISTICAL INFORMATION.

It seemed desirable to group and tabulate the recent and valuable information forwarded by our legations from foreign countries, although incomplete, and to indicate the present and probable future production, consumption in coinage and the arts, the demand and the supply of gold and silver in those countries.

The effort has been not to duplicate information already published and in the possession of the public, through the reports presented to Congress, and it is only reproduced when necessary to complete a summary of the statistics embracing the field of examination.

In some cases the figures are based upon estimates, but unless so indicated, they are taken from official dispatches and publications, or recognized authorities.

The exhaustive examination made by Dr. Soetbeer, published in the present year, shows the total production of the precious metals in all countries since the discovery of America, the comparative values of gold and silver during that period, and their coinage since the year 1850.

What is presented here will merely supplement the information contained in that publication, and that presented in the report of the Silver Commission of 1876, and of the International Convention, lately published by Congress.

The statistics contained in those reports, as far as used, have, when practicable, been compared with the official reports, with the dispatches and later information presented in the Appendix, and with the official publications at the command of this office.

## WORLD'S PRODUCTION OF GOLD AND SILVER.

The information in relation to the production of the precious metals contained in the dispatches received is so meagre that no correct estimate of the world's production can be based upon it for the last or preceding year.

The annual supply of gold, which reached its height in the year 1856, has very largely declined within the last few years, as will be seen from the following table of the production of gold in the three countries which produce about four-fifths of the world's supply:

## GOLD.

Year.	United States.	Russia.	Australia.	Total.
1853.....	\$65,000,000	\$16,000,000	\$50,600,000	\$131,600,000
1856.....	55,000,000	18,000,000	61,000,000	134,000,000
1861.....	43,000,000	15,500,000	53,000,000	111,500,000
1870.....	50,000,000	23,400,000	40,000,000	113,400,000
1876.....	39,929,166	22,300,000	28,000,000	90,229,166
1877.....	46,897,390	27,000,000	24,000,000	97,897,390
1878.....	51,206,360	*25,000,000	23,000,000	99,206,360
1879.....	38,899,858	*25,000,000	*23,000,000	86,899,858

\* Estimated.

A table is presented in the Appendix, taken from the publication of Dr. Soetbeer, the eminent German statistician, showing the estimated annual production of gold and silver for a series of years. This estimate is higher than many of those heretofore published.

It is safe to say that the production of gold during the last year was



less and the production of silver considerably greater than the annual average given by Dr. Soetbeer for 1871-1875, viz:

Gold.....	\$113,432,300
Silver.....	81,849,300
Total .....	195,281,600

#### THE WORLD'S CONSUMPTION IN ARTS, MANUFACTURES, AND ORNAMENTATION.

The official dispatches contain but little additional information on this subject, except in continuation of statistics heretofore published.

Articles containing or composed of gold or silver are required in France to be examined and marked by a bureau of guarantee, and the quantity of gold or silver contained is registered. In the last twenty-four years, the value of gold in the articles thus registered was \$222,140,729, and of silver \$81,423,938, being an annual average of \$9,255,863 of gold, and \$3,392,664 of silver.

An examination of the law shows that the articles are permitted to be of three standards of fineness for gold, namely, 920, 840, and 750 thousandths, a mean fineness of 837 thousandths, and of two standards for silver, 950 and 800, making the mean fineness of the latter 875. The statement of the value of the gold and silver thus used in France would have to be correspondingly diminished were it not that much gold and silver used and dissolved for chemical and electro-plating purposes, and probably that made into gold or silver leaf, are not stamped or recorded; and the annual consumption probably fully equals the figures given for the last year.

Gold.....	\$10,817,006
Silver .....	3,250,046
Total .....	14,067,052

Upon these data, an approximate estimate can be made of the consumption of precious metals in countries similarly situated, especially on the continent of Europe. Other data of the excess of imports over exports of precious metals into countries not using them for coinage, as, for instance, India, where the imports of gold in forty years have exceeded the exports by more than \$400,000,000, of which only \$3,000,000 have been coined as money, are thought to indicate a large annual absorption and consumption of the precious metals in every country.

From the data thus furnished and from inability to account for the disappearance of a large excess in imports over exports of the precious metals in other countries, except that they had been used in manufactures and arts, computations have been made of the amount consumed for these purposes in such countries and in the world.

If, however, all civilized countries used as large an amount proportioned to their population as France and the United States, the world's annual supply would not suffice, and nothing would be left for new coinage. It is a very moderate estimate that the remaining countries of Europe and America, containing fourfold the population and including nations wealthy, powerful, and far advanced in manufactures and the arts, consume twice as much as France and the United States, and to place the total consumption of Europe and America for these purposes at from 45 to 55 millions of gold and from 25 to 35 millions of silver. The use of silver would be proportionally greater and of gold less in other countries than the proportionate consumption of those metals in France and the United States.

## STATISTICS OF COINAGE.

The future use or annual appropriation of silver and gold is so uncertain that opinions and conjectures are of little value.

The coinage of gold is open for depositors at the mints in almost every country of the Western World, while silver has, with few exceptions, been excluded, except on government account.

A table is presented in the Appendix showing the value in United States money of the coinages of the various countries of the world, as far as they could be ascertained, for the last four years, separately. While this table is valuable as showing the work performed by the mints of the countries issuing metallic money, it does not accurately show the amount each country has added to its stock of coined money, for a considerable portion consists of recoinage of existing coins.

Where official records of specie imports and exports fail to distinguish coin from bullion, the coinage statistics of a country furnish imperfect and insufficient data for estimating its metallic circulation, except for short periods after a change in its coinage and the demonetization of pre-existing coins.

It is evident that the aggregate coinage of all the countries for a single year or given period must far exceed the actual addition to the world's stock of coined money for the same time; for the coinage in every country is largely manufactured from newly-coined money imported and withdrawn from the circulation of other countries.

In ascertaining the value of silver both in this and the other tables presented in the appendix, the coinage rate of the standard silver dollar has been taken as the basis of the computations.

As shown by the table of coinages, the total coinage of several of the principal countries of the World for the last few years has been:

Year.	No. of countries.	Gold.	Silver.	Total.
1875.....	20	\$195, 987, 428	\$119, 915, 467	\$315, 902, 895
1876.....	16	213, 119, 278	126, 577, 164	339, 696, 442
1877.....	12	173, 675, 555	78, 402, 848	252, 078, 203
1878.....	13	161, 605, 523	73, 613, 342	235, 218, 864

The closure of European mints to the free coinage of silver has lessened the amount of that metal coined, and its coinage will be comparatively light, unless nations now under suspension of specie payments undertake to resume and use silver more freely for that purpose. The annual consumption by Great Britain for fractional coinage indicates that only about fifteen millions would be required by Europe for coinage should gold become the single standard of that continent, and five millions would suffice to renew the subsidiary coinage of America should silver be demonetized in this continent also.

## STATISTICS OF CIRCULATION.

The paper circulation of commercial countries is ascertained without much difficulty, as the issues of governments and banks are generally given in official reports.

The specie in circulation in the world at any given year or period, or even in a particular country, cannot be accurately ascertained, and must in part be estimated. Approximate figures may be given, but no statistician will claim exactness.

The opinions of the best and latest authorities attainable have been collated, and are presented in a table with late official statements of paper circulation or approximate estimates.

The aggregate circulation of twenty-four States, with a population of 446,699,890, is as thus reported and estimated:

Paper.....	\$3, 306, 480, 151
Gold.....	2, 685, 691, 372
Silver (full legal tender).....	813, 912, 303
Silver (limited tender).....	310, 247, 960
Total.....	7, 116, 331, 786

which shows a per capita circulation of \$15.93, of which \$7.40 is paper and \$8.53 metallic. The per capita circulation of gold is \$6.02, of full legal-tender silver \$1.82, and of limited tender silver \$0.69.

In nine of these countries, having a paper circulation of \$1,407,335,236, specie payments have been suspended, and some of them use largely base metals for fractional currency, of which no account has been taken.

#### COURSE OF PRICES.

The discovery of the gold mines of California and Australia, and outpouring of their mineral wealth to that of the Old World, excited an apprehension in Europe lest an oversupply of silver and gold might diminish the purchasing power of money, disturb values, and inflate prices.

The large production of the precious metals in the last few years has been measurably absorbed by increasing wealth, wider commerce, and the more frequent interchange of commodities.

Notwithstanding the large additions to the monetary supply by the Comstock Lode, the prices of commodities measured in silver as well as gold have lowered. This may in part be accounted for by the change in several European countries from the silver to the gold standard.

The Director of the Mint, in his report for 1873, predicted that "the gradual adoption of the gold standard and consequent demonetization of silver will, of course, be followed by an increase in the value of gold, or, what is the same thing, a decrease in the price of articles measured by it."

Sufficient time has elapsed since 1873 to verify this prediction and to permit an examination of the course of prices which it may be profitable to trace through the last six years.

The prices of the exports of a country are usually regulated by the prices in the markets of the world, are least disturbed by local influences and best suited for such comparisons. The exports of this country for the last ten years, dividing value by quantity of each article, give the yearly average export price.

Rejecting a few articles of which the small quantity exported or variable quality afford no fair criterion, there remain eighty articles comprising 84 per cent. of the value of the merchandise exports of last year.

The results of a comparison of the price of each article in subsequent years with its price in 1870, added and averaged for each year, afford an indication of the general rise or fall of prices; that is, the purchasing power of money in this country for each of the ten years. Such examination shows a rise in gold prices from 1870 to 1874 and subsequent de-

prices in each year to the prices of 1870 being in United gold as follows:

Comparative currency prices of exports with their like price in 1869-'70.	Comparative gold prices of exports with their like price in 1869-'70.	Comparative purchasing value of United States notes with their like value in 1869-'70, as measured by the prices of United States exports.	Comparative purchasing value of gold with its like value in 1869-'70, as measured by the prices of United States exports.	Comparative purchasing value of silver.
\$1 00	\$1 00	\$1 00	\$1 00	\$1 00
95.6	1 04.7	1 04.6	95.5	95.7
95.3	1 04.8	1 04.9	95.4	96.15
98.7	1 06.5	1 01.3	93.8	92.8
99.1	1 09	1 00.9	91.7	89.1
91.0	1 00.2	1 08.8	99.8	94.8
85.5	92.4	1 16.9	1 08.3	98.2
82.5	94	1 21.2	1 06.3	95.7
73.9	88.7	1 35.3	1 12.7	1 00.0
67.7	86	1 47.7	1 16.2	97.9

the year 1869-'70 are nearly the average prices for the five decades preceding the year 1879, namely, 1829, and 1869.

has not been made, and it may be impossible to ascertain the average prices of the fiscal year 1869-'70 are average prices in the last fifty years or during the century; but the prices as given in English statistical authorities are about the closing year of five preceding decades, except 1849. The prices in Europe, combined with those of American prices, show the following comparative prices of commodities and purchasing power of gold and silver for the last

	Prices of commodities in—		Purchasing value (measured by commodities) of—	
	Gold.	Silver.	Gold.	Silver.
.....	\$100	\$100	\$100	\$100
.....	102.2	101.1	97.9	98.9
.....	104.8	105	95.4	95.3
.....	106.4	107.7	94	92.9
.....	104.6	107.7	95.6	92.9
.....	98.3	103.3	101.8	96.8
.....	96.3	106.1	103.8	94.2
.....	95.9	107.6	104.3	93
.....	91.6	103.2	109.2	96.9
.....	86.7	103	115.3	97.1

are the average prices taken from statistical authorities named of American exports and leading English except for the last two years of French imports and as to those countries the comparative average of gold and silver respectively during the ten years. The statistics indicate a rise in the value of money measured in Europe, and especially during the last year in this movement of the precious metals to this country. The decline in prices may be expected on the Continent, and the United States.

#### PRESENT MONETARY SITUATION.

It may be asserted with reasonable confidence and with regard to the present monetary situation.

As general prices have not advanced above those of fifty years ago the annual supply of the precious metals, although increased fivefold, is not excessive nor more than sufficient to satisfy the world's present needs for coinage and manufactures.

The larger production has been absorbed and required by the growing wealth, commerce, and population of civilized nations, and has not inflated prices by depreciating the value of money.

Probably one-half of the gold and one-third of the silver annually obtained from the mines are consumed in manufactures and the arts, and from one-third to one-half of the silver and the remainder of the gold are appropriated, and under present legislation will be required, for coinage in Europe and America, while the vast populations of India and China will continue to absorb the surplus of silver as heretofore during the century in varying amounts from 20 to 40 millions of dollars.

Should the free coinage of silver at a fixed valuation with gold be established by international agreement and suitable legislation, no excess of silver above the needs for coinage, manufacture and Eastern export may be feared, and silver from such universal legal power equally with gold to discharge indebtedness, and the necessity for its use for the smaller denominations could not materially fall below the comparative valuation that may be agreed upon.

Should the \$650,000,000 of silver coins now permitted to circulate as full legal tender in Europe be demonetized consequences will follow more disastrous to the stability of silver and all monetary values than have attended its partial exclusion from European circulation, and its immediate further depreciation would pour the whole supply upon nations willing to receive and use it as money. Silver would become almost their exclusive circulation.

The United States could not single-handed among commercial nations, with no European co-operation or allies, sustain the value of silver from the inevitable fall.

If European nations continue to decline overtures for an international agreement in regard to the coinage of silver, the expediency of opening our mints to the free coinage of their present stock of silver and inviting its speedy demonetization or export here is questionable.

The true policy of this country is such conservative action as will tend to bring the values of gold and silver to their former relations, upholding the one and preventing the appreciation of the other until it can be determined whether commercial nations are willing that both metals should be yoked for equal monetary service.

But in case the use of silver as money must be abandoned, it is gratifying to believe that the vast resources, the agricultural and mineral wealth, the present development of mining and manufacturing interests and facilities for inland commerce, the comparative lightness of taxation and relief from heavy foreign indebtedness, and, above all, the productive genius, industry, inventive skill, and capacity of the people of the United States will enable them to retain, or as now, draw from abroad the gold needed for their monetary use, and that the commercial disasters and depression threatened or feared as the result of restricting the commercial world to one metal are more likely to fall upon the nations that initiated, and are responsible for, the movement.

I am, very respectfully,

HORATIO C. BURCHARD,  
*Director of the Mint.*

HON. JOHN SHEEMAN,  
*Secretary of the Treasury.*

## REPORT OF FIRST COMPTROLLER OF THE TREASURY.

TREASURY DEPARTMENT,  
FIRST COMPTROLLER'S OFFICE,  
Washington, D. C., November 8, 1879.

SIR: In compliance with the request contained in your letter of September 11, 1879, I have the honor to submit the following report.

The transactions of this office during the fiscal year which ended June 30, 1879, will be first presented.

\* \* \* \* \*

ASSIGNMENT OF CLAIMS.

By a statute enacted in 1853, the substance of which has been inserted in the Revised Statutes, it was declared that all transfers and assignments made of any claim upon the United States, or of any part or share thereof, or interest therein, whether absolute or conditional, and whatever might be the consideration therefor, should be absolutely null and void, unless they were freely made and executed in the presence of at least two attesting witnesses, after the allowance of such a claim, the ascertainment of the amount due, and the issuing of a warrant for the payment thereof.

In the same year a circular was issued by Mr. Comptroller Whittlesey defining the term "claim" as employed in the clause above recited. The circular instanced many examples of what might be regarded claims, and what would not be regarded such within the meaning of the statute, and summed up with the conclusion that ordinary debts and accounts against the government which had been legally contracted and never disputed, are not claims within the meaning of this statute, and that the statute applies only to uncertain damages and losses, extra allowances, pensions, equitable demands, claims for the correction of alleged errors, claims for a return or repayment of duties, items of account which have been rejected, or are disputed, and such classes of cases as in Congress are usually referred to the Committee on Claims, and to committees other than the Committee of Ways and Means. The term claim was thus held not to have been employed in its most comprehensive sense. The construction thus given to the statute has been steadily maintained in the Treasury Department for more than twenty-five years.

In the case of the United States *vs.* Gillis, decided at the October term of the Supreme Court of the United States, 1877, that learned court said that the words of this statute "embrace every claim against the United States, however arising, of whatever nature it may be, and wherever and whenever presented" (95 U. S., 407). And in the later case of *Spofford vs. Kirk*, decided at the October term, 1878 (97 U. S., 484), that court, referring to the same statute, said:

It would seem to be impossible to use language more comprehensive than this. It embraces alike legal and equitable assignments. It includes powers of attorney, orders, or other authorities for receiving payment of any such claim, or any part or share thereof. It strikes at every derivative interest, in whatever form acquired, and incapacitates every claimant upon the government from creating an interest in the claim in any other than himself.

It is proper to state that the right of action in the first-mentioned case was founded on an assignment of a claim to recover the proceeds of cotton seized under the Abandoned and Captured Property Act

of March 12, 1863, and the second upon an assignment of a claim against the United States for supplies furnished to the Army during the war of the rebellion, and that neither claim, therefore, was for a sum liquidated and unchallenged; so that, in case of a suit upon an assignment of a demand of the latter character, it is possible that that learned court might not feel authoritatively bound by the comprehensive language employed in the two cases above cited.

The inconveniences that would be felt from a construction of this statute which would give to the term claim a signification as broad as the term demand would be very great. Illustrations of these inconveniences would too much lengthen this report. They are detailed at length in the circular of Mr. Whittlesey. The cases above cited have occasioned much anxiety to the accounting officers. I think the attention of Congress ought to be called to the statute, and that it ought to be invited to define the term claim in such manner as, while perhaps limiting it a little more closely than has been the practice of the Treasury, would not leave it so comprehensive as to embrace every demand against the United States.

#### LOST AND DESTROYED BONDS.

Section 3702 of the Revised Statutes enacts that whenever it appears to the Secretary of the Treasury, by clear and unequivocal proof, that any interest-bearing bond of the United States has, without bad faith upon the part of the owner, been destroyed wholly or in part, or so defaced as to impair its value to the owner, and the bond is identified by number and description, the Secretary shall, under such regulations and with such restrictions as to time and retention for security or otherwise, as he may prescribe, issue a duplicate thereof, &c.; or, if the bonds have been called in for redemption, instead of issuing a duplicate, it shall be paid. The next section enacts that the owner shall file in the Treasury a bond, in a sum prescribed, with two good and sufficient sureties, residents of the United States, to be approved by the Secretary, with condition to indemnify and save harmless the United States from any claim upon such destroyed or defaced bond.

Applications for duplicates, or for the redemption of such bonds, are referred, under regulations prescribed by the Secretary of the Treasury, to the First Comptroller, to be decided upon by him.

It will be perceived that bonds payable to bearer come within the terms of this statute; and the practice has been to issue duplicates for, or to redeem, bonds of this character alleged to have been destroyed, upon evidence furnished by affidavits taken before certain prescribed officers of the United States. The redemption of such bonds and the issuing of duplicates have always been refused until after the lapse of six months from the filing of an application; but even with this precaution the statute is fraught with great danger to the Treasury. In practice it has been found that in fully half the cases where evidence has been offered to establish the fact of destruction, the bonds have not been destroyed, but have passed either by theft or collusion into the hands of other holders. When a bond of this kind is lost or stolen, the owner who has been deprived of it is apt soon to persuade himself that it has been destroyed, as only in case of its having been destroyed can he entertain reasonable hope of ever receiving payment. Instances also have occurred of persons offering most impressive evidence of the destruction of bonds alleged to have been owned by them, who, subsequent events have shown, had no title to them whatever. Great vigi-



lance has been practiced by the Treasury by the invocation, even when very slight doubt has been excited, of the aid of the secret-service division; but it is believed that no vigilance can be sufficient to guard against the ingenious methods by which fraudulent applications may occasionally be made successful. If no radical change is made in the existing statute, authority ought at least to be given to require more than two sureties to the bond of indemnity. Indeed in cases as well of registered bonds as bonds payable to bearer, this authority ought to be conferred.

#### DISBURSING CLERKS.

All disbursing officers of the departments are required by law to give bonds. In the cases of the clerks in the several departments appointed to disburse moneys, the penalties of the bonds are usually small in amount compared with the sums almost constantly in their hands for disbursement. Away from their friends, and the tenure of their offices being precarious, it would with most of them be difficult, perhaps, if not impossible, to give bonds adequate to secure the government against possible losses. One disbursing-clerk of the Treasury Department, of great fidelity and long experience, disbursed during the last fiscal year more than five million dollars. The penalty of his bond is thirty-five thousand dollars. Another, of like character and experience, disbursed a million and a quarter. The penalty of his bond is ten thousand dollars. These amounts seem small; but the Secretary of the Senate usually disburses in the course of a fiscal year more than eight hundred thousand dollars, and the Clerk of the House about a half million, and their bonds are fixed by law at but twenty thousand dollars. Officers of the Quartermaster's, Subsistence, and Pay Departments of the Army, almost without exception, though the disbursements of many of them are very large, give bonds in the sum of twenty thousand dollars. Officers, however, appointed by the Secretary of the Treasury, with the exception of the disbursing clerks, generally give bonds in an amount sufficient to cover all possible losses. In the case of these disbursing clerks the security of the government is chiefly in their personal integrity and the frequency with which their accounts are subjected to investigation. The care and fidelity with which they generally perform their difficult and responsible duties cannot be too highly commended. The task of frequently overhauling their accounts, in the absence of any specific requirement of law, is an ungracious one, though such investigation has never, so far as I have knowledge, been regarded by them as offensive. The frequency and the manner in which these investigations should be made ought, it would seem to me, to be prescribed by law.

#### DOUBLE SALARIES.

Section 1763 of the Revised Statutes enacts that no person who holds an office the salary or annual compensation attached to which amounts to the sum of two thousand five hundred dollars shall receive compensation for discharging the duties of any other office, unless expressly authorized by law. Section 1764 prescribes that no allowance or compensation shall be made to any officer or clerk by reason of the discharge of duties which belong to any other officer or clerk in the same or any other departments; and that no allowance or compensation shall be made for any extra services whatever which any officer or clerk may be required to perform, unless expressly authorized by law. Section 1765 declares that no officer in any branch of the public service, or any other



person whose salary, pay, or emoluments are fixed by law or regulations, shall receive any additional pay, extra allowance, or compensation, in any form whatever, for the disbursement of public money, or for any other service or duty whatever, unless the same is authorized by law, and the appropriation therefor explicitly states that it is for such additional pay, extra allowance, or compensation. It has been steadily held under these several provisions that to no officer or clerk performing additional services in the same line of duty or performing duties which belong to another officer or clerk, can an extra allowance or compensation be made for such additional service; but the Attorney-General has expressed the opinion in several instances where his opinion has been requested, that an officer or clerk who holds two distinct commissions, or exercises an employment independent of and distinct from his duties as such officer or clerk, may be paid the salary of both offices or compensation for such additional employment, if the salary of such officer or clerk under the first appointment does not exceed twenty-five hundred dollars, and if there is an appropriation out of which payment may be made for this class of work or service, though the statute may not provide for payment of additional compensation to such officer or clerk by name or other identification. It is not meant to call in question this construction of the statute, which, so long as the case of *Converse vs. The United States* (21 Howard, 463) shall be regarded authoritative, cannot well be avoided; but in giving effect in one or two instances in the adjustment of accounts, to this interpretation, I have not been able to free myself from a lurking suspicion that it was not in harmony with the intention of the framers of these provisions. I deem it proper that the attention of Congress shall be drawn to the manner in which these sections are construed in the particulars mentioned, in order that, if the construction is not satisfactory, the statute may be made more perspicuous.

Incidentally, in this connection, it deserves to be remarked that the provisions of Title Four of the Revised Statutes, entitled "Provisions applicable to all the Executive Departments," seem, where the term department is used, not to be applicable to the Department of Agriculture, the departments to which the statute shall apply being specifically mentioned, and the Department of Agriculture being omitted. In the careful work of Mr. Elmes on the Executive Departments, recently published, he coincides with the view of this office in this interpretation. In this title several important provisions not now applicable to the Department of Agriculture occur, respecting the salaries of clerks and other matters, which it is difficult to believe that Congress did not accidentally omit to make applicable to that department.

#### DISTRICT OF COLUMBIA.

The differences between the Commissioners of the District of Columbia and the officers of the Treasury charged by law with the examination of their accounts, have, with one or two exceptions, been harmoniously adjusted. These exceptions relate chiefly to the question whether the Commissioners or the Treasurer of the United States has the authority to make requisitions for certain classes of advances. The intention of Congress in the statutes relating to the District under its new organization has in several instances been imperfectly expressed, and differences of construction have arisen in a candid effort upon the part of the Commissioners and the accounting officers to collect the intention of Congress from phrases fairly susceptible of two interpretations. If, in a very few particulars, Congress shall by amendatory leg-

meaning in more perspicuous phraseology, entire attention may be made to prevail between the Commissioning officers, and the affairs of the District by their own may be frugally and carefully conducted.

NATIONAL BOARD OF HEALTH.

visions in the several acts relating to the National have been referred by you to this office for construction has in every instance been recommended efficient ends contemplated by Congress, but a strict maintained in relation to proof that the moneys claimed have been actually expended, and disbursed for by law. It is pleasant to be able to say that the office have been kindly and hospitably received by board, and that the expenditures of the board— have never been withheld by it where it was deemed legally and usefully employed—have thus far expended fourth of the appropriations made by Congress. commendation of the chiefs of division, clerks, and employed in this bureau for the intelligence and fidelity have performed their duties.

honor to be, very respectfully,

A. G. PORTER,  
First Comptroller.

ERMAN,  
ary of the Treasury.

SECOND COMPTROLLER OF THE TREASURY.

TREASURY DEPARTMENT,  
SECOND COMPTROLLER'S OFFICE,

Washington, October 13, 1879.

ance with your request by letter of the 11th ultimo, I summary statement of the business done in this office ar which ended on the 30th day of June, 1879. ble shows the total number of accounts and claims d, with amounts allowed thereon; also referred and that do not involve a present expenditure:

From—	Number revised.	Amounts.
.....	8,872	\$22,107,337
.....	8,009	42,642,216
.....	1,727	10,277,774
.....	18,608	81,027,327
ing present expenditure.....	2,311	2,244,230
ounts involved.....	20,919	83,271,557

bles furnish a more detailed statement of the same es, showing the number revised and adjusted, the ne, the amounts allowed, and the source from which

*Accounts revised during the year.*

Character of accounts.	Number revised.	Amounts.
<b>From the Second Auditor:</b>		
1. Of Army paymasters, for pay of the Army, including mileage to officers and general expenses .....	442	\$13,416,286
2. Special accounts, including ordnance, medical, recruiting, and contingent expenses of the War Department .....	2,139	1,582,620
3. Of agents of Indian affairs, for the current and contingent expenses of the Indian service, including annuities and instalments under treaties .....	2,526	6,737,274
<b>Total .....</b>	<b>5,107</b>	<b>21,736,180</b>
<b>From the Third Auditor:</b>		
1. Of disbursing-officers of the Quartermaster's Department, for the regular supplies and incidental expenses .....	1,010	10,393,598
2. Of disbursing-officers of the Subsistence Department .....	631	2,018,067
3. Of disbursing-officers of the Engineer Department, for military surveys, the construction of fortifications, river and harbor surveys and improvements .....	110	8,532,251
4. Of pension-agents, for the payment of pensions, &c. ....	269	21,563,541
<b>Total .....</b>	<b>2,020</b>	<b>38,437,457</b>
<b>From the Fourth Auditor:</b>		
1. Of the disbursing-officers of the Marine Corps .....	7	551,846
2. Of the paymasters of the Navy proper .....	147	4,499,145
3. Of paymasters of the Navy Department at the navy-yards .....	84	6,330,342
4. Of paymasters of the Navy acting as navy-agents and disbursing-officers .....	14	3,612,036
5. Of Navy pension-agents, for the payment of pensions to the invalids of the Navy and Marine Corps .....	68	776,631
6. Miscellaneous naval accounts .....	91	289,750
7. Financial agents .....	4	46,628
<b>Total .....</b>	<b>415</b>	<b>16,106,378</b>

*Claims examined and allowed during the year.*

Character of claims.	Number revised.	Amounts.
<b>From the Second Auditor:</b>		
1. Soldiers' pay and bounty .....	3,765	\$371,157
<b>From the Third Auditor:</b>		
1. Lost property, under act of March 3, 1849 .....	364	54,420
2. Miscellaneous, including quartermaster's, commissary, and transportation .....	5,575	3,996,581
3. Oregon and Washington Territory Indian war-claims .....	45	23,634
4. State war-claims .....	5	130,112
<b>Total .....</b>	<b>5,989</b>	<b>4,204,759</b>
<b>From the Fourth Auditor:</b>		
1. Sailors' pay and bounty .....	1,071	159,095
2. Prize-money .....	241	12,301
<b>Total .....</b>	<b>1,312</b>	<b>171,396</b>
<b>Cases not involving present expenditure:</b>		
1. Duplicate checks .....	404	19,363
2. Financial agents (Navy) .....	4	2,224,807
3. Referred cases .....	1,903	
<b>Total .....</b>	<b>2,311</b>	<b>2,244,230</b>

Bonds filed .....	116
Contracts filed .....	2,030
Letters written and copied .....	1,541
Requisitions recorded during the fiscal year .....	17,349
Settlements recorded during the fiscal year .....	8,929
Differences recorded .....	6,251
Clerks employed during the fiscal year .....	54

In addition to the labor above classified, a variety of incidental investigations and other duties have been performed, requiring careful and

at cannot be summarized without extending this report  
 ble length.  
 pleasure to be able again to bear testimony to the ability,  
 istry of the Deputy Second Comptroller, Mr. James S.  
 is of division and clerks of the office by whom this work  
 lished.  
 ectfully,

W. W. UPTON,  
*Comptroller.*

HERMAN,  
*of the Treasury.*

C OF THE COMMISSIONER OF CUSTOMS.

TREASURY DEPARTMENT,  
 OFFICE OF COMMISSIONER OF CUSTOMS,  
*Washington, October 13, 1879.*

he honor to submit herewith, for your information, a  
 work performed in this office during the fiscal year  
 1879 :

on hand July 1, 1878.....	249
received from the First Auditor during the year.....	6,316
	<u>6,565</u>
s adjusted during the year.....	6,254
s returned to First Auditor.....	12
	<u>6,266</u>

on hand June 30, 1879..... 299  
 d into the Treasury from sources the accounts relating  
 tled in this office—

ms.....	\$137,250,047 70
ne-hospital tax.....	359,646 85
about fees.....	270,405 57
penalties, and forfeitures.....	163,513 06
ge, fees, &c.....	748,880 04
ased passengers.....	100 00
ument fees.....	187,889 26
age of examiners.....	579 20
est on debts due.....	25,521 14
of public buildings.....	9,048 15
f of sick and disabled seamen.....	602 56
eds of government property.....	6,566 11

139,022,799 64

s paid out of the Treasury:

ases of collection.....	\$5,485,543 87
s of deposits.....	1,924,246 31
ntures.....	4,931,133 23
ic buildings.....	2,490,889 14
truction and maintenance of lights.....	2,342,664 14
truction and maintenance of revenue-cutters.....	850,224 47
ne-hospital service.....	374,950 50
aving stations.....	501,965 62
ensation in lieu of moieties.....	42,109 51
f acts.....	15,774 50
fisheries in Alaska.....	19,063 30
ic standard weights and measures.....	3,448 75
ement of disbursing officers' accounts.....	38,505 54
ntures and other charges.....	2,521 49

On account of refunding duties.....	\$12 19
On account of refunding fine to B. Maddock, owner of schooner Ocean King .....	45 00
On account of refunding duties to Saint Michael's Church.....	1,588 65
On account of unclaimed merchandises .....	761 26
On account of distributive shares, fines, penalties, and forfeitures...	5 37
	<hr/>
	19,025,452 84

The number of estimates received.....	3,294
The number of requisitions issued.....	3,293
The amount involved in requisitions .....	\$15,703,669 53
The number of letters received .....	10,685
The number of letters written .....	11,232
The number of letters recorded .....	11,381
The number of stubs of receipts for duties and fees returned by collectors.....	179,179
The number of stubs examined .....	148,144
The number of stubs of certificates of payment of tonnage dues received and entered .....	9,756
The value of postage-stamps used .....	1 46
The number of returns received and examined.....	13,782
The number of oaths examined and registered.....	4,334
The number of appointments registered.....	3,278
The average number of clerks employed.....	30

I inclose herewith a statement of the transactions in bonded goods during the year ending June 30, 1879, as shown by the adjusted accounts.

I am, very respectfully, your obedient servant,

H. C. JOHNSON,  
*Commissioner of Customs.*

Hon. JOHN SHERMAN,  
*Secretary of the Treasury.*

## REPORT OF THE FIRST AUDITOR OF THE TREASURY.

TREASURY DEPARTMENT,  
FIRST AUDITOR'S OFFICE.  
Washington, October 30, 1879.

SIR: I have the honor to submit the following exhibit of the business transacted in this office during the fiscal year ending June 30, 1879.

Accounts adjusted.	Number of accounts.	Amount.
RECEIPTS.		
Duties on merchandise and tonnage.....	1,258	\$123,883,235 55
Steamboat fees .....	1,045	263,045 45
Fines, penalties, and forfeitures .....	837	164,284 03
Marine-hospital money collected.....	1,409	354,376 50
Official emoluments of collectors, naval officers, and surveyors.....	1,262	616,045 67
Moneys received from sale of old materials, rents, &c .....	164	80,440 14
Miscellaneous receipts.....	763	872,991 16
Moneys received on account of deceased passengers .....	18	100 00
Internal and commercial intercourse fees .....	1	2,842 92
Treasurer of the United States, for moneys received.....	4	668,366,795 52
Mints and Assay Offices.....	28	120,059,008 31
Manufacture of medals .....	1	8,679 47
Moneys retained from Pacific Railroad companies (interest account).....	12	1,564,913 63
Water-rents, Hot-Springs, Arkansas .....	4	7,054 28
Receipts on counter-warrants.....	259	404,987 78
Total.....	7,207	917,547,949 78

Accounts adjusted.	Number of accounts.	Amount.
DISBURSEMENTS.		
Revenue from customs.....	1,662	\$5,687,001 66
.....	251	3,359,966 72
.....	379	1,227,635 09
.....	625	822,260 03
.....	1,329	5,68,975 91
.....	791	296,928 05
.....	1,275	628,872 74
.....	192	30,177 13
.....	12	4,534 85
.....	432	454,087 33
.....	136	282,488 68
.....	192	480,672 62
.....	166	191,568 84
.....	164	334,996 19
.....	57	44,441 01
.....	57	168,541 03
.....	6	1,170 63
.....	10	42,483 59
.....	3	131 74
.....	4	701,251 89
.....	8	293,118 41
.....	1	1,684,946 16
.....	25	287,072 48
.....	4	22,532 00
.....	399	5,467,434 14
.....	39	320,112 37
.....	1,282	557,817 71
.....	4	13,550 00
.....	13	24,297 28
.....	3	21,902 44
.....	5	4,412 25
.....	2	15,538 73
.....	5	179,848 99
.....	2	5,128 38
.....	4	2,646 81
.....	5	71,310 01
.....	5	10,466 32
.....	3	22,448 74
.....	4	5,921 12
.....	10	7,465 24
.....	7	46,525 92
.....	5	854 62
.....	3	8,573 01
.....	61	247,194 39
.....	45	269,082 73
.....	218	330,463 70
.....	49	31,551 43
.....	717	25,014 84
.....	6	577 97
.....	4	2,010 43
.....	9	3,714 20
.....	12	899 04
.....	4	2,173 93
.....	4	1,708 95
.....	23	732 36
.....	12	3,449 51
.....	4	567,892 64
.....	1	161,130 25
.....	28	118,812 82
.....	114	1,189,534 30
.....	28	211,565 61
.....	22	62,911 55
.....	1	17,981 15
.....	4	2,519 25
.....	4	1,044 83
.....	4	67,129 89
.....	1	4,989 95
.....	1	200 00
.....	25	164,758 50
.....	5	30,489 27
.....	36	5,861 03
.....	3	21,073 21
.....	1	1,550 00
.....	22	521,691 31
.....	6	125,133 28
.....	3,267	4,289,153 22
.....	6	13,180 04

Accounts adjusted.	Number of accounts.	Amount.
<b>DISBURSEMENTS—Continued.</b>		
Suppressing counterfeiting and fraud .....	40	\$90,716 28
Reproducing plats of surveys, General Land Office .....	1	6,370 00
Registered interest accounts .....	49	17,107,243 62
Registered interest accounts, Pacific Railroad bonds .....	23	5,110,306 08
Payment of coin coupons .....	104	85,021,670 87
Navy pension fund .....	1	420,000 00
Louisville and Portland Canal Company bonds, interest account .....	8	47,550 00
District of Columbia bonds, interest account .....	4	484,650 00
District of Columbia water-tax bonds, interest account .....	1	20,400 00
Redemption of United States bonds, principal and interest .....	22	150,783,606 25
Redemption of certificates for conversion, principal and interest .....	6	18,623,583 23
Redemption of Treasury notes, principal and interest .....	56	21,429 33
Redemption of coin certificates of deposit .....	8	47,895,300 00
Redemption of currency certificates of deposit .....	9	54,105,000 00
Redemption of silver certificates of deposit .....	8	7,859,470 00
Redemption of legal-tender notes (destroyed) .....	13	74,228,070 00
Redemption of fractional currency (destroyed) .....	12	1,265,031 68
Redemption of bonds of the District of Columbia .....	2	273,800 00
Refunding the national debt .....	23	1,050,980 37
Judgments of the Court of Claims .....	77	385,477 18
Reporting decisions of Court of Claims .....	5	6,000 00
Post-Office Department requisitions .....	41	5,528,063 11
Outstanding drafts and checks .....	139	31,103 22
Transportation of public money .....	220	187,715 65
Life-Saving Service .....	48	134,206 28
Life-Saving Service, contingent expenses .....	101	40,075 05
Establishing life-saving stations .....	74	104,509 81
Public printing and binding .....	98	324,970 76
Labor and expenses of engraving and printing .....	17	843,738 97
Propagation of food-fishes .....	35	69,570 45
Illustrations for report on food-fishes .....	2	1,000 00
Increase of Library of Congress .....	7	14,872 39
Construction of custom-houses .....	160	1,007,753 49
Construction of court-houses and post-offices .....	364	1,279,115 20
Construction of subtreasury building, San Francisco .....	5	15,186 18
Construction of appraisers' stores .....	18	98,183 98
Construction of building for State, War, and Navy Departments .....	14	845,087 84
Construction of light-houses .....	267	330,186 72
Construction of light-house depot, Thirteenth district .....	5	9,129 80
Construction of building for Bureau of Engraving and Printing .....	6	40,792 34
Construction of jail for the District of Columbia .....	3	1,545 46
Plans for public buildings .....	6	3,001 32
Completion of Washington Monument .....	4	89,026 41
Repairs and preservation of public buildings .....	125	116,402 68
Repairs, lighting, &c., Executive Mansion .....	10	40,891 42
Annual repairs of the Capitol .....	5	50,337 82
Annual repairs of the Treasury building .....	13	12,301 51
Repairs of the Interior Department building .....	3	3,373 39
Reconstructing Interior Department building .....	3	4,269 57
Reconstructing Interior Department building, plans for .....	1	600 00
Repairs to building on Tenth street .....	3	358 57
Rent of buildings in Washington .....	23	50,681 62
Fuel, lights, and water for public buildings .....	00	323,437 21
Fuel, lights, &c., Interior Department .....	5	10,632 80
Furniture and repairs of same for public buildings .....	34	49,452 68
Furniture and repairs of same for Court of Claims .....	2	1,550 00
Furniture, contingencies, &c., office of Commissioner of Pensions .....	1	308 10
Furniture, cases, &c., Department of Agriculture .....	5	3,948 40
Vaults, safes, and locks for public buildings .....	8	20,509 34
Heating apparatus for public buildings .....	59	68,843 20
Heating apparatus for United States Senate .....	3	4,250 00
Improvement and care of public grounds .....	3	12,845 33
Improving Botanic Garden and buildings .....	7	11,511 96
Improving and lighting Capitol grounds .....	13	98,834 23
Purchase of property corner of Pennsylvania avenue and First street west .....	3	52,004 15
Improvement of grounds, Agricultural Department .....	4	6,801 96
Washington Aqueduct .....	6	21,848 15
Repairs of water-pipes and fire-plugs .....	6	3,096 07
Repairs of Navy Yard and upper bridges .....	8	1,577 80
Adapting ponds in Monument lot to the culture of cane .....	3	7,199 98
Telegraph to connect Capitol with Departments and Government Printing Office .....	7	811 08
Lands and other property of the United States .....	9	1,532 78
Pedestal for statue of General George H. Thomas .....	6	21,113 34
Works of art for the Capitol .....	4	11,425 00
International Exhibition of 1876 .....	4	3,383 30
Experimental garden, Agricultural Department .....	4	6,759 66
Laboratory, library, and museum, Agricultural Department .....	14	3,678 66
Postage, Agricultural Department .....	4	3,475 85
Collecting agricultural statistics .....	5	11,400 62
Purchase and distribution of valuable seeds .....	5	78,789 83

Accounts adjusted.	Number of accounts.	Amount.
<b>DISBURSEMENTS—Continued.</b>		
Investigating diseases of swine and other domestic animals.....	3	\$7,998 51
Investigating the history of insects injurious to agriculture and cotton plant.....	3	7,643 76
Expenses of Board of Health, District of Columbia.....	2	3,191 46
Inquiries into the causes of steam-boiler explosions.....	7	1,799 99
Map of the United States.....	2	4,000 00
Statistical Atlas of the United States.....	2	10,000 00
Degradations on public timber.....	5	18,595 28
Investigation of frauds, Pension Office.....	3	25,688 78
Removal of Bureau of Education.....	3	2,185 31
Protection and improvement of Hot Springs, Arkansas.....	4	3,281 75
Claims of workmen, act June 20, 1878.....	102	18,526 25
Columbia Institution for the Deaf and Dumb, current expenses.....	7	74,842 42
Columbia Institution for the Deaf and Dumb, buildings and grounds.....	6	81,879 01
Columbia Hospital for Women, current expenses.....	8	10,444 47
Government Hospital for the Insane, current expenses.....	4	169,780 46
Government Hospital for the Insane, buildings and grounds.....	4	28,023 82
Maryland Institution for the Instruction of the Blind.....	4	5,550 00
Support of Children's Hospital.....	3	3,946 79
Ballou School, District of Columbia.....	5	29,287 58
National Association for the Relief of Colored Women and Children.....	5	11,829 97
Support of Freedmen's Hospital and Asylum.....	5	41,280 04
Miscellaneous.....	572	1,045,044 00
Disbursements on transfer warrants.....	259	464,987 78
<b>Total.....</b>	<b>17,618</b>	<b>1,147,581,192 79</b>

Number of accounts recorded.....	13,824
Number of letters recorded.....	3,210
Judiciary emolument accounts registered and referred.....	530
Number of powers of attorney for collection of interest on the public debt examined, registered, and filed.....	5,891
Requisitions answered (incomplete).....	470

*Statement of transactions in bonded merchandise, as shown by warehouse and bond accounts adjusted during the fiscal year ending June 30, 1879.*

Number of accounts adjusted.....	908
Number of reports of "no transactions" received, examined, and referred.....	619
	<u>1,527</u>

Balance of duties on merchandise in warehouse per last report.....	\$15,126,598 20
Add balance at Richmond, Va., from 1877, omitted from last report..	1,874 60
Duties on merchandise warehoused.....	56,192,623 91
Duties on merchandise rewarehoused.....	2,024,720 35
Duties on merchandise constructively warehoused.....	18,343,729 33
Increased and additional duties.....	1,445,029 10
<b>Total.....</b>	<b>93,134,575 49</b>

**Contra:**

Duties on merchandise withdrawn for consumption.....	\$54,963,167 75
Duties on merchandise withdrawn for transportation.....	3,890,725 58
Duties on merchandise withdrawn for exportation.....	18,406,383 12
Allowances for deficiencies, damages, &c.....	1,954,170 20
Duties on withdrawal for construction and repair of vessels.....	64,923 77
Duties on bonds delivered to district attorneys for prosecution.....	143,340 79
Balance merchandise in warehouse.....	13,711,864 28
<b>Total.....</b>	<b>93,134,575 49</b>

Under the act of June 20, 1878, providing for the payment of certain claims of workmen against contractors under the late board of public



works of the District of Columbia, eighteen hundred and fourteen (1,814) claims were filed, aggregating the sum of one hundred and forty-six thousand five hundred and ninety-four dollars and thirty-seven cents (\$146,594.37).

Claims amounting to eighteen thousand five hundred and twenty-six dollars and twenty-five cents (\$18,526.25) were allowed by this office and certified to the First Comptroller.

The remainder, aggregating one hundred and twenty-eight thousand and sixty-eight dollars and twelve cents (\$128,068.12) were rejected as not coming within the provisions of the act above cited. In the settlement of these claims four hundred and twenty-six (426) letters and circulars were mailed, and schedules of every claim allowed by this office were prepared and sent to the District Government for examination.

The accounts of the Commissioners of the District of Columbia, covering the expenditures made by them on account of said District for the months of July, August, and September, 1878, were examined and ready for statement, but were delayed, owing to a change in the manner of entering up advances to the Commissioners upon the books of the Register of the Treasury.

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R. M. REYNOLDS,  
*First Auditor.*

Hon. JOHN SHERMAN,  
*Secretary of the Treasury.*

## REPORT OF THE SECOND AUDITOR OF THE TREASURY.

TREASURY DEPARTMENT,  
SECOND AUDITOR'S OFFICE,  
Washington, October 25, 1879.

SIR: I have the honor to submit the following report of the operations of this bureau during the fiscal year ending June 30, 1879:

### RESUMÉ.

Accounts and settlements.	On hand July 1, 1878.	Received during the year.	Adjusted during the year.	On hand, unset- tled, June 30, 1879.	Letters written.	Amount in- volved.
Paymasters' accounts.....	46	591	483	154	1,547	\$19,906,903 15
Arrears of pay and bounty.....	15,752	22,795	18,377	20,170	84,826	204,450 01
Ordinance accounts.....						1,425,171 76
Medical accounts.....						263,320 77
Recruiting accounts.....						239,066 62
Freedmen's branch, Adjutant General's Office	201	1,946	1,660	481	5,844	49,737 81
National Home for Disabled Volunteer Sol- diers.....						1,141,549 42
Miscellaneous accounts and claims.....						127,375 21
Payments to Soldiers' Home.....		14	14			108,562 23
Indian disbursing account.....	120	955	624	451		2,753,832 54
Indian claims.....		3,330	2,037	393	8,120	3,796,366 05
Indian property accounts.....	482	553	683	352		
War property accounts.....	8,191	8,880	4,295	7,776	2,634	
Miscellaneous settlements.....		453	453			101,792 85
<b>Total.....</b>	<b>24,792</b>	<b>24,517</b>	<b>20,592</b>	<b>20,777</b>	<b>97,971</b>	<b>21,489,073 43</b>

the number of letters written, as stated above, 34,259 the various divisions of the office, making a total of

number of clerks employed during the year was 134. reference, and as containing interesting statistical information tabular statements showing the work of the organization sixty-two years ago.

STATEMENT No. 1.

of accounts settled from March 4, 1817, to June 30, 1861.

Accounts.	From March 4, 1817, to June 30, 1847.	From June 30, 1847, to June 30, 1861.	Total.
Miscellaneous.....	13,232	6,695	19,927
g officers.....	12,880	6,097	18,977
.....	6,283	21,361	27,644
.....	1,759	1,427	3,186
.....	3,254	5,592	8,846
.....	37,408	41,142	78,550

STATEMENT No. 2.

d and amounts involved from June 30, 1861, to June 30, 1879.

Masters' accounts.		Ordnance, medical, and miscellaneous.		Indian agents' disbursing accounts and Indian claims.	
Amount.	No.	Amount.	No.	Amount.	
\$1,181,276 33	4,017	\$29,128,526 30	616	\$3,335,885 23	
47,875,231 36	11,692	28,847,899 20	590	2,099,257 87	
88,944,415 39	15,988	55,539,537 64	501	2,242,154 74	
90,094,847 46	22,059	42,647,677 68	866	3,291,449 00	
110,269,718 92	7,228	26,902,784 54	448	2,881,256 33	
183,641,476 09	3,206	23,650,181 18	821	4,273,208 91	
146,365,528 14	1,897	20,481,892 13	962	5,301,722 89	
183,052,980 46	1,990	8,598,706 04	1,169	4,715,039 43	
141,438,630 00	1,708	3,571,107 13	1,172	3,033,827 41	
124,063,652 23	2,394	2,023,763 26	1,482	8,191,634 63	
131,057,413 62	1,865	1,566,924 96	1,649	6,351,816 32	
27,116,621 39	2,567	1,968,183 01	1,871	8,329,188 21	
17,257,093 25	2,768	6,125,429 70	1,648	4,074,860 43	
14,837,714 20	2,264	3,161,634 67	2,167	0,033,207 25	
15,562,739 75	2,177	2,346,339 67	2,242	7,081,063 57	
12,604,098 41	2,207	2,193,969 62	2,974	8,568,480 73	
12,773,194 23	1,828	2,390,151 91	3,550	5,101,308 06	
10,566,003 15	1,666	3,257,711 74	3,531	6,551,198 59	
1,301,415,493 61	69,511	273,797,691 68	28,229	91,240,105 60	

*Accounts settled and amounts involved from June 30, 1861, to June 30, 1879—Continued.*

For the year ending—	Bounty, arrears of pay, &c.		Regular and volunteer recruiting accounts.		Freedmen's Bureau accounts.	Total.	
	No.	Amount.	No.	Amount.	Amount.	No.	Amount.
June 30, 1862...	3,328	\$240,180 64	1,504	\$217,088 97	9,606		\$37,111,957 47
June 30, 1863...	19,191	2,443,293 89	1,356	398,785 94	33,584		91,664,407 76
June 30, 1864...	80,756	10,970,528 91	1,880	2,220,744 15	90,898		159,917,380 83
June 30, 1865...	84,517	14,047,599 35	2,594	8,019,331 66	110,774		158,040,305 05
June 30, 1866...	78,335	16,189,247 17	4,317	21,353,127 68	91,309		177,536,134 34
June 30, 1867...	59,121	10,638,782 38	3,765	19,891,437 69	68,364		240,895,086 55
June 30, 1868...	203,980	19,598,445 88	2,416	5,262,140 63	210,293		196,932,639 67
June 30, 1869...	85,279	8,355,618 22	1,478	2,841,079 24	91,132		207,563,432 39
June 30, 1870...	53,826	4,160,770 31	946	2,443,906 48	58,735		154,648,298 32
June 30, 1871...	40,078	2,342,164 42		957,010 35	44,797		137,587,164 89
June 30, 1872...	22,170	1,278,160 29		657,266 02	27,974		139,911,580 61
June 30, 1873...	32,420	1,664,985 64		405,060 44	37,891		48,025,763 77
June 30, 1874...	27,315	1,230,827 04		220,489 75	32,079		30,586,710 35
June 30, 1875...	19,476	981,407 74		223,962 79	24,353		26,094,594 27
June 30, 1876...	11,433	485,084 65		224,877 89	16,417		25,912,519 00
June 30, 1877...	13,709	577,340 79		132,699 16	19,498		24,313,612 26
June 30, 1878...	15,774	442,601 59		418,773 31	21,712		21,586,615 51
June 30, 1879...	18,377	394,456 01		239,066 63	24,087		21,489,073 43
Total.....	869,175	96,050,501 72	20,256	66,126,848 38	10,996,836 00	1,026,103	1,899,834,336 47

## STATEMENT NO. 3.

*Property accounts adjusted and miscellaneous work performed in connection with the settlement of accounts.*

For the year ending—	Number of property accounts adjusted.	Number of bounty claims rejected.	Number of letters written.	Number of letters, &c., received, briefed, and registered.	Number of requisitions registered and posted.	Number of certificates from rolls, &c., furnished Adjutant-General's and other offices.
June 30, 1862...	5,021	882	14,564	37,473	5,589	.....
June 30, 1863...	7,368	1,470	40,051	134,816	5,144	.....
June 30, 1864...	29,745	2,374	108,373	254,690	5,410	.....
June 30, 1865...	163,429	2,210	128,569	170,340	5,995	38,904
June 30, 1866...	176,263	19,099	370,020	245,903	2,698	74,041
June 30, 1867...	141,698	27,236	478,477	436,305	2,401	134,328
June 30, 1868...	129,463	41,217	603,698	220,209	1,868	320,408
June 30, 1869...	91,322	26,526	405,745	171,931	2,709	125,315
June 30, 1870...	43,689	22,865	363,556	173,487	2,842	16,435
June 30, 1871...	39,171	22,955	233,129	237,754	2,519	18,138
June 30, 1872...	237,675	22,873	202,658	133,857	2,606	29,309
June 30, 1873...	41,775	18,346	265,544	194,574	2,679	42,303
June 30, 1874...	31,138	17,618	237,485	186,534	3,261	35,647
June 30, 1875...	4,932	11,981	131,321	118,602	3,440	53,849
June 30, 1876...	4,746	7,856	101,140	94,464	3,388	22,874
June 30, 1877...	5,613	0,569	100,046	116,503	3,957	9,040
June 30, 1878...	4,712	16,018	105,496	121,066	4,481	10,068
June 30, 1879...	4,295	27,327	132,230	119,996	5,162	11,528
Total.....	1,162,055	290,262	4,026,722	3,218,714	66,147	942,229

It will be observed that during the last fiscal year the current work of the office has fallen in arrear, there being 4,985 more accounts and claims on hand awaiting adjustment on June 30, 1879, than on June 30, 1878. At the same time the work performed in 1879 is greatly in excess of any year since 1875, when the number of employes was reduced to 175. The increased arrearage is attributable partly to the continued increase of work and partly to the fact that the clerical force is inadequate to the

prompt transaction of public business. In the annual report for 1876 it was stated that "in consequence of the large reduction recently made in the clerical force of the office it will be hardly possible to do more at present than to dispose of the current work. If, indeed, further arrears do not accumulate, greater delays in settlements must occur to disappoint the expectations of claimants and disbursing officers, notwithstanding the best efforts of the gentlemen employed."

Since 1876 the force has been still further reduced to 145, but the business of the office has steadily increased, as will be seen by the subjoined figures :

Fiscal year.	Number of accounts and claims received.	Number of accounts and claims adjusted.
1876.....	18,826	22,168
1877.....	20,876	25,923
1878.....	26,415	27,245
1879.....	34,517	29,533

The correspondence of the office and the number of requisitions on the Treasury issued by the War and Interior Departments have also increased as follows :

	1876.	1877.	1878.	1879.
Letters written.....	101,140	106,046	105,496	132,230
Requisitions registered.....	3,386	3,957	4,481	5,162

Under the act of February 19, 1879, entitled "An act for the payment to the officers and soldiers of the Mexican war of the three months' extra pay provided for by the act of July 19, 1848," a large number of claims have been presented for settlement. After due consideration and consultation, the accounting officers decided that, so far as Army claimants are concerned, the act of 1879 merely revives the act of 1848, which limited the allowance of three months' extra pay to those who were in actual service and served out the term of their enlistment or were honorably discharged during the war, and to certain relatives of deceased soldiers. In accordance with this decision, and pending additional legislation, action has been deferred on the applications of those officers and soldiers who continued in the military service after the close of the war, and who were not entitled to extra pay under the provisions of the act of 1848.

As might be expected, numerous claims have been presented, no doubt in good faith, by parties who were paid in full, either by paymasters on muster-out, by the Pay Department prior to July 25, 1850, or through this office subsequent to that date. Up to the 30th ultimo the total number of claims filed under the act of February 19 was 3,208, of which 2,721 have been disallowed and only 19 paid, leaving 468 on hand for future settlement. In addition to these formal claims, 5,633 letters, inquiring whether the writers were entitled to extra pay, have been received and answered in the negative. In these old cases, where nearly a third of a century has elapsed since the services were rendered, letters of inquiry involve the same labor and research as the preliminary examination of regular claims, and materially add to the work of the office, but in such a way that the increase cannot very well be shown in any report of work performed.

The gentlemen employed in this office are deserving of special commendation for the manner in which they have performed the constantly-increasing work allotted to them. In ability, industry, faithfulness, and the competent discharge of their duties, it is believed that they will compare very favorably with the clerical force of any bureau of the department.

Very respectfully,

C. F. HERRING,  
*Acting Auditor.*

Hon. JOHN SHERMAN,  
*Secretary of the Treasury.*

## REPORT OF THE THIRD AUDITOR OF THE TREASURY.

TREASURY DEPARTMENT,  
THIRD AUDITOR'S OFFICE,  
Washington, October 25, 1879.

SIR: I have the honor to transmit herewith report of the operations of this office for the fiscal year ended June 30, 1879. The following statement shows, in tabular form, the number and amount of accounts and claims received and audited, and the number and amount of accounts and claims remaining unsettled at that date, viz:

Description of accounts.	Number of accounts remaining on hand June 30, 1878.	Number of accounts received in fiscal year ended June 30, 1879.	Number of accounts settled in the fiscal year ended June 30, 1879.		Number of accounts unsettled June 30, 1879.	
	Monthly and quarterly.	Monthly and quarterly.	Accounts.	Amount involved.	Accounts.	Amount involved.
Quartermasters' money .....	605	2,734	2,801	\$11,116,421 01	558	\$1,800,068 07
Quartermasters' property .....	379	2,806	2,965	220		
Commissarys' money .....	650	1,004	1,998	2,071,356 37	625	823,183 14
Pension agents' money .....	114	256	281	25,765,870 58	80	12,375,103 43
Engineers' money .....	23	222	213	3,737,851 00	33	3,342,074 34
Signal officers' money .....	57	100	107	414,483 47	50	143,772 13
Signal officers' property .....	41	801	663		179	
Claims for horses lost .....	5,465	202	471	81,435 84	5,106	941,316 51
Claims for steamboats destroyed .....	72	2	1	1,020 00	73	757,378 87
Oregon war claims .....	663	287	240	35,358 09	710	5,499 69
Miscellaneous claims .....	12,572	4,246	4,144	4,340,937 91	12,074	8,427,640 54
State war claims .....	0	3	3	369,834 70	0	4,247,868 07
<b>Total .....</b>	<b>20,659</b>	<b>13,643</b>	<b>13,686</b>	<b>48,834,588 97</b>	<b>20,416</b>	<b>31,734,105 59</b>

### BOOKKEEPER'S DIVISION.—(J. F. Jones, chief.)

The duty devolving upon this division is to keep the appropriation and money accounts of disbursing-officers, which are settled in this office.

The annexed statement shows the amount drawn out of certain of its appropriation accounts, and also the repayments made through this office into the Treasury, and is a full exhibit of its financial operations during the fiscal year.

Financial operations of the Third Auditor's Office during the fiscal year ended June 30, 1879.

	Advances to officers and agents during the fiscal year.	Claims paid during the fiscal year.	Transfers not involving an expenditure from the Treasury.	Special relief acts.	Total.
As drawn by War and Navy Secretary of the Treasury of sundry amounts relating to the maintenance and outfit of expeditions, viz:					
D. D. . . . .	\$3,413,561 41	\$42,618 49	\$4,426 22		\$3,460,436 12
M. D. . . . .	1,011,411 87	44,862 30	227 61		1,056,501 78
M. D. . . . .	893,857 72	43,044 62	2,760 14		942,192 48
for railroads . . . . .	4,677,993 93	652,559 62	10,588 97		4,741,133 52
for hospitals . . . . .	74,999 59	1,509,755 79			1,584,755 38
for other works . . . . .	294,164 63	885 36			295,050 00
for river . . . . .		10,592 01			10,592 01
for national . . . . .	128,408 45	1,750,000 00			1,878,408 45
for equipment . . . . .	56,369 32	10,193 66			66,562 98
for stores . . . . .	1,059,497 91	51 00	188 17		1,110,737 08
for and their . . . . .	350,081 68	41,947 63			392,029 31
for at Fort . . . . .		923 17			923 17
for . . . . .	58,847 83				58,847 83
for . . . . .		10,485 97			10,485 97
for cemetery at . . . . .	1,500 00				1,500 00
for . . . . .	100,000 00				100,000 00
for . . . . .		193,859 36			193,859 36
for . . . . .	100,000 00				100,000 00
for . . . . .	10,575 81				10,575 81
for . . . . .	65,726 00				65,726 00
for . . . . .	40,000 00				40,000 00
for . . . . .		279,908 18			279,908 18
for . . . . .		722,080 91	129 27		722,210 18
for . . . . .		94,037 05	185 16		94,222 21
for . . . . .	50,000 00				50,000 00
for . . . . .				\$22,040 49	22,040 49
for . . . . .	7,000 00				7,000 00
for . . . . .	25,000 00				25,000 00
for . . . . .	99 51				99 51
for . . . . .	100 00				100 00
for . . . . .	6,747,760 00				6,747,760 00
for . . . . .	2,113,675 00	27,850 09	604 01		2,142,129 10
for . . . . .		108,854 07	6,207 99		115,062 06
for . . . . .		1,332 00	7 88		1,339 88
for . . . . .	28,058,660 00	8,412 20	9,784 92		28,076,857 12
for . . . . .				25,000 00	25,000 00
for . . . . .				2,440 00	2,440 00
for . . . . .				4,000 00	4,000 00
for . . . . .				93,132 00	93,132 00
for . . . . .				13,200 00	13,200 00

*Statement showing the financial operations of the Third Auditor's Office, &c.—Continued.*

	Advances to officers and agents during the fiscal year.	Claims paid during the fiscal year.	Transfers not involving an expenditure from the Treasury.	Special relief acts.	Total.
Relief of Jacob Christian .....	.....	.....	.....	\$67 50	\$67 50
Relief of persons suffering from ravages of grasshoppers .....	.....	.....	\$663 99	.....	663 99
Relief of George R. Dennis .....	.....	.....	.....	2,394 66	2,394 66
Relief of Mrs. Emma A. Porch .....	.....	.....	.....	700 00	700 00
Relief of Emilie R. Hooe .....	.....	.....	.....	1,455 33	1,455 33
Capture of Jefferson Davis .....	.....	\$293 00	.....	.....	293 00
Headstones for graves of soldiers in private cemeteries, act Feb. 3, 1879 .....	\$10,000 00	.....	.....	.....	10,000 00
	58,662,421 56	5,559,567 77	35,773 43	169,293 21	64,427,085 97

The number of credit and counter requisitions drawn by the Secretaries of War and Interior on sundry persons in favor of the Treasurer of the United States is 1,116, on which repayments into the Treasury have been made through the Third Auditor's Office during the fiscal year ended June 30, 1879, as follows:

Deposits .....	\$1,069,567 70
Transfer accounts .....	185,263 69
Total .....	1,274,851 39

**THE QUARTERMASTER'S DIVISION.—(I. S. Tichenor, chief.)**

The accounts of quartermasters cover a wide range of money and property responsibility. The former embraces disbursements for barracks and quarters, hospitals, storehouses, offices, stables, and transportation of Army supplies, the purchase of Army clothing, camp and garrison equipage, cavalry and artillery horses, fuel, forage, straw, material for bedding, and stationery; payments of hired men and of "per diem" to extra-duty men; expenses incurred in the pursuit and apprehension of deserters, for the burial of officers and soldiers, for hired escorts, expresses, interpreters, spies, and guides, for veterinary surgeons and medicines for horses, for supplying posts with water, and for all other proper and authorized outlays connected with the movements and operations of the Army not expressly assigned to any other department. Property purchased with the funds of the Quartermaster's Department is accounted for upon "returns" transmitted through the Quartermaster-General to this office (with the exception of "returns of clothing, camp and garrison equipage," which come under the supervision of the Second Auditor), showing that the disposition made of it is in accordance with law and Army regulations.

*Statement showing the operations of the Quartermaster's Division for the fiscal year ended June 30, 1879.*

	Money accounts.		Property returns.	Supplemental settlements.		
	Number.	Amount involved.		Property.	Money.	Amount involved.
On hand per last report .....	605	\$1,721,562 85	379	.....	.....	.....
Received during the fiscal year .....	2,754	11,104,926 83	2,806	18	207	\$156,083 70
Total .....	3,359	12,916,489 68	3,185	18	207	156,083 70
Reported during the fiscal year .....	2,801	11,116,421 01	2,965	18	207	156,083 70
Remaining unsettled .....	538	1,800,068 67	220	.....	.....	.....
Total .....	3,359	12,916,489 68	3,185	18	207	156,083 70

*Statement showing the operations of the Quartermaster's Division, &c.—Continued.*

	Signal accounts.			Total.	
	Property.	Money.	Amount involved.	Number.	Amount involved.
On hand per last report .....	41	57	\$187,737 96	1,082	\$1,909,300 81
Received during the fiscal year .....	801	100	370,517 64	6,686	11,721,528 17
<b>Total .....</b>	<b>842</b>	<b>157</b>	<b>558,255 60</b>	<b>7,768</b>	<b>13,630,828 98</b>
Reported during the fiscal year .....	663	107	414,483 47	6,701	11,686,988 18
Remaining unsettled .....	179	50	143,772 13	1,067	1,943,840 80
<b>Total .....</b>	<b>842</b>	<b>157</b>	<b>558,255 60</b>	<b>7,768</b>	<b>13,630,828 98</b>

Number of letters written by Quartermaster's Division, 6,153; average number of clerks employed, 17 $\frac{5}{8}$ ; number of vouchers examined, 199,375; number of pages of manuscript written, 5,351.

#### SUBSISTENCE DIVISION.—(Andrew Cauldwell, chief.)

The Subsistence Division examines the accounts of all commissaries and acting commissaries in the Army whose duties are to purchase the provisions and stores necessary for its subsistence, and to see to their proper distribution.

These commissaries render monthly money accounts, with proper vouchers for disbursements of the funds intrusted to them, together with a provision-return, showing the disposition of provisions and stores purchased or derived from other sources. These accounts are received through the Commissary General of Subsistence, and are examined and audited in this division.

The money accounts and vouchers, together with a certified statement of the result of said examinations, are then referred to the Second Comptroller of the Treasury for revision. Upon their return from the Comptroller, with the settlement approved, the officers are notified of the result and called upon to adjust or explain any omissions or errors that may have been discovered. The money and provision accounts, together with the vouchers and papers belonging thereto, are then placed in the settled files for future reference, and remain permanently in the custody of this office.

The engineer branch is engaged in the examination of the accounts of officers and agents of the Engineer Department, who, under direction of the Chief of Engineers of the Army (except the Superintendent of the Military Academy at West Point, whose disbursements are directed by the Inspector-General), disburse moneys out of the various appropriations, now 248 in number, made from time to time by Congress for works of a public nature, which may be classed under the following heads, viz: The purchase of sites and materials for and construction and repairs of the various fortifications throughout the United States; construction and repairs of roads, bridges, bridge-trains, &c., for armies in the field; surveys on the Atlantic and Pacific coasts; examination and surveys of the northern and western lakes and rivers; construction and repairs of breakwaters; repairs and improvement of harbors, both on sea and lake coasts; improvement of rivers and purchase of snag and dredge boats for the same; and the expense of the Military Academy at West Point.



The transactions of the subsistence and engineer branches for the fiscal year are shown by the following statement, viz:

	Subsistence accounts.			Engineer accounts.	
	Number.	Amount involved.	Provision returns.	Number.	Amount involved.
On hand per last report, June 30, 1878.....	659	\$844,644 29	555	23	\$1,154,028 70
Received during fiscal year.....	1,904	2,940,895 22	1,904	222	4,925,896 64
Total.....	2,623	3,794,539 51	2,519	245	6,079,925 34
Audited during fiscal year.....	1,998	2,971,356 37	1,998	212	3,737,851 06
Remaining on hand June 30, 1879.....	625	823,183 14	521	33	2,342,074 34

Number of vouchers examined, 113,348; number of letters written, 1,649; number of difference sheets written, 784; number of "calls" answered, 636; number of clerks employed, 9.

#### CLAIMS DIVISION.—(W. S. Stetson, chief.)

This division has the settlement of claims of a miscellaneous character arising in the various branches of service in the War Department and growing out of the purchase or appropriation of supplies and stores for the Army; the purchase, hire, or appropriation of water-craft, railroad stock, horses, wagons, and other means of transportation; the transportation contracts of the Army; the occupation of real estate for camps, barracks, hospitals, fortifications, &c.; the hire of employés, mileage, courts-martial fees, traveling expenses, commutations, &c.; claims for compensation for vessels, railroad cars, engines, &c., lost in the military service; claims growing out of the Oregon and Washington war of 1855 and 1856, and other Indian wars; claims of various descriptions under special acts of Congress, and claims not otherwise assigned for adjudication.

#### Miscellaneous claims for fiscal year 1878-1879.

	Number.	Amount claimed.	Amount allowed.
On hand July 1, 1878.....	12,572	a \$8,069,707 83	.....
Received during the year.....	4,246	b 4,700,090 62	.....
Total.....	16,818	12,768,798 45	.....
Disposed of during the year.....	4,144	c 4,340,957 91	d \$3,840,023 26
On hand July 1, 1879.....	12,674	d 8,427,840 54	.....

a This is the amount claimed in 11,072 cases, the amount claimed in the other 1,500 cases not being stated.

b This is the amount claimed in 4,090 cases, the amount claimed in the other 156 cases not being stated.

c This is the amount claimed in 4,011 cases, the amount claimed in the other 133 cases not being stated.

d This is the amount claimed in 11,142 cases, the amount claimed in the other 1,532 cases not being stated.

Number of letters written during the year, 2,709.

Oregon and Washington Indian war claims, 1855-56.			Lost vessels, act March 3, 1849.		
Num-ber.	Amount claimed.	Amount allowed.	Num-ber.	Amount claimed.	Amount allowed.
603	\$18,254 44		72	\$702,378 87	
287	622,603 34		2	26,020 00	
950	40,857 78		74	728,398 87	
240	635,358 69	\$24,719 08	1	1,020 00	\$1,000 00
710	45,499 69		73	727,378 87	

claimed in 342 cases, the amount claimed in the other 321 cases not being stated.  
 claimed in 98 cases, the amount claimed in the other 189 cases not being stated.  
 claimed in 95 cases, the amount claimed in the other 115 cases not being stated.  
 claimed in 345 cases, the amount claimed in the other 365 cases not being stated.  
 cases written during the year, 174.

**INDIAN CLAIMS DIVISION.**—(T. E. G. Pettengill, chief.)

This division embrace the settlement, under the various acts of Congress relating thereto, of all claims of the Indian Territories for the "cost, charges, and expenses proper for enrolling, subsisting, clothing, supplying, feeding, paying, and transporting their troops employed in the recent insurrection against the United States," and for the loss of Indian and other border invasions.

It includes claims for compensation for loss of horses and mules by officers or enlisted men while in the military service of the United States, and for the loss of horses, mules, oxen, and harnesses, while in said service, by impressment or

State claims.	Original accounts.		Suspended accounts.	
	Num-ber.	Amount.	Num-ber.	Amount.
1 year ended June 30, 1879.	9	\$3,556,878 56	24	\$4,409,910 15
	3	1,060,824 21		
1 year ended June 30, 1879.	12	4,617,702 77	24	4,409,910 15
	3	369,824 70	3	24,758 74
	9	4,247,868 07	21	4,385,151 41

Horse claims.	Original accounts.			
	Num-ber.	Amount.	Num-ber.	Amount.
1 year ended June 30, 1879.			5,405	\$971,461 82
			158	45,271 78
fiscal year ended June 30, 1879.			44	6,018 75
1 year ended June 30, 1879.	369	\$54,638 84	5,667	1,022,752 35
		5,931 85		
1 year ended June 30, 1879.		60,570 69		
	102	29,863 15		
1 year ended June 30, 1879.			471	81,435 84
1 year of during the fiscal year.			5,199	941,316 51

is made, 1,095; number of claims examined and suspended, 4,129; number of letters received, 4,129; number of letters sent, 4,129; number of clerks, 5.

## COLLECTION DIVISION.—(J. M. Vale, chief.)

*Statement of business transacted by the collection division during the year ended June 30, 1879.*

Date.	Entered on registers.	Special cases.		Bounty-land and pension cases examined.	Letters written.	Number of soldiers of the war of 1812 abstracted.	Days comparing.	Cases prepared for suit.
		Number of special cases.	Accounts referred to.					
July, 1878.....	548	350	3,701	559	332	18,578	89½	.....
August, 1878.....	1,133	203	2,074	896	256	20,399	48½	1
September, 1878.....	1,903	198	2,158	723	169	18,281	118	.....
October, 1878.....	1,968	214	2,354	810	175	19,661	114½	.....
November, 1878.....	1,859	211	2,896	589	170	12,278	45½	.....
December, 1878.....	1,105	150	2,462	681	146	10,361	16½	3
January, 1879.....	2,359	309	4,126	1,047	253	11,483	20	1
February, 1879.....	.....	146	2,654	970	101	4,791	18	.....
March, 1879.....	5,207	343	3,708	1,394	317	7,099	26	1
April, 1879.....	2,224	294	3,864	1,203	273	8,716	30	.....
May, 1879.....	1,892	281	3,803	957	282	4,784	15	.....
June, 1879.....	1,923	254	3,381	780	204	2,882	.....	2
Total.....	22,121	2,963	37,181	10,618	2,759	139,313	541½	8

During the past fiscal year nothing has been done in checking property purchased and paid for on abstracts A, A A, and B upon the accountability abstracts of the purchasing officers, because of the insufficiency of force in the collection division. The importance of this work, in order to protect the government from fraudulent and erroneous claims, has been set forth in preceding annual reports. Work has been continued during the fiscal year in abstracting the names of soldiers of the war of 1812, for the purpose of arrangement in alphabetical registers, with all the clerical force available. Two hundred and seventy-one thousand two hundred and thirty-four payments have been abstracted, which is probably one-fourth of the payments made for services in that war. In order to complete these registers within a period of time that will be available to the old soldiers and their widows whose applications for pension are now pending in the office of the Commissioner of Pensions, but whose service cannot be traced for lack of data to base a search upon, an increase in the clerical force in this division will be necessary. In many cases, of widows especially who know the fact by tradition that their former husbands served in the war of 1812, the claimants do not know or have forgotten the names of the officers under whom they served. Until these alphabetical registers are completed, this office is unable to trace the service of any soldier without the name of the captain or colonel under whom the soldier served; when these registers shall be completed, a knowledge of the name of the soldier will be a sufficient clue to trace his military service. The current work of the collection division has largely increased during the fiscal year, and, if the same ratio of increase continues, additional clerical force will be required to keep it up.

\* ARMY PENSION DIVISION.—(W. H. Whitney, chief.)

The duties of this division embrace the settlement of all accounts which pertain to the payment of Army pensions throughout the United States. An account is kept with each pension agent, charging him with all moneys advanced for payment to pensioners, under the proper bond

and fiscal year. At the end of each month the agent forwards his vouchers, abstract of payments, and money statement direct to this office, where a preliminary examination is made to see if the money advanced is properly accounted for. The receipt of the account is then acknowledged, and the account filed for audit. Each voucher is subsequently examined, and the payment entered on the roll-book opposite the pensioner's name. The agent's account, when audited, is reported to the Second Comptroller for his revision, and a copy of the statement of errors, if any, sent to the agent for his information and explanation. The account, when revised, is returned by the Second Comptroller to this office and placed in the settled files, where it permanently remains. The following tables show the operations of this division during the fiscal year:

*Amounts refunded to the credit of the following appropriations during the fiscal year ended June 30, 1879.*

Invalids, 1871 .....	\$334 96
Widows and others, 1871 .....	8,091 72
Invalids, 1872 .....	209 80
War of 1812, 1872 .....	53 33
Widows and others, 1872 .....	776 46
Army pensions, 1873 .....	516 92
Army pensions, 1874 .....	760 47
Army pensions, 1875 .....	1,019 93
Army pensions, 1876 .....	20,096 48

	Army pen- sions.	Compensa- tion.	Fees on vouchers.	Fees to surgeons.	Total.
Balance on hand June 30, 1878, ap- propriation 1877 .....	\$753,722 05	\$1,386 68	\$38,161 50	\$36,159 11	\$828,569 34
Amount refunded and deposited, ap- propriation 1877 .....	1,108 56	26 49		4 00	6,139 05
Total .....	754,830 61	1,413 17	38,161 50	36,163 11	835,648 39
Amount paid on settlement of ac- counts, appropriation 1877 .....	2,665 83	275 49	12 68	13 40	2,967 40
Balance to credit of appropriation, June 30, 1879 .....	757,244 78	1,137 68	38,148 82	36,149 71	832,680 90

NOTE.—The above amounts were all carried to the surplus fund.

	Army pen- sions.	Compensa- tion.	Fees on vouchers.	Fees to surgeons.	Total.
Balance on hand June 30, 1878, ap- propriation 1878 .....	\$687,922 08	\$129,251 31	\$19,463 25	\$7,381 23	\$844,017 87
Amount refunded and deposited, ap- propriation 1878 .....	298,760 62	1,100 18	1,172 25	1,011 36	302,043 81
Total .....	1,186,682 10	130,351 49	20,635 50	8,392 59	1,346,061 68
Amount paid on settlement of ac- counts, appropriation 1878 .....	3,407 62	6 00		5,066 00	6,479 62
Balance to credit of appropriation June 30, 1879 .....	1,183,274 48	130,345 49	20,635 50	5,326 59	1,339,582 06

*Amount appropriated to pay Army pensions for the fiscal year ended June 30, 1879.*

Invalids .....	\$13,150,000 00
Widows, minors, and dependent relatives .....	12,830,000 00
Survivors war 1812, act 14th February, 1871 .....	800,000 00
Widows war 1812, act 14th February, 1871 .....	280,000 00
Survivors war 1812, act 9th March, 1878 .....	532,000 00
Widows war 1812, act 9th March, 1878 .....	967,974 00
Fees to examining surgeons .....	50,000 00
Pay and allowances .....	213,500 00

28,823,474 00

Amount drawn against the \$1,800,000 appropriated for Army and Navy, act January 27, 1879 .....	\$1,052,637 66
Amount drawn against the \$1,800,000 after June 30, to make amount of agents' payment .....	88,833 02
Amount to be accounted for (as follows) .....	<u>29,964,944 68</u>

Amount paid invalids .....	\$14,771,393 57
Amount paid widows .....	11,128,566 50
Amount paid survivors war 1812, act 14th Feb'y, 1871 .....	654,070 31
Amount paid widows war 1812, act 14th Feb'y, 1871 .....	268,901 96
Amount paid survivors war 1812, act 9th March, 1878 .....	343,272 01
Amount paid widows war 1812, act 9th March, 1878 .....	1,923,608 24
Amount paid fees to examining surgeons .....	85,543 50
Amount paid pay and allowances .....	201,967 24
Amount of unexpended balances in agents' hands to be deposited .....	587,621 35
	<u>29,964,944 68</u>

Arrears of pensions, acts January 25 and March 3, 1879, paid as follows:

Amount paid invalids .....	2,842,658 23
Amount paid widows and others .....	1,176,869 10
Amount paid fees on vouchers .....	1,884 00
Total paid to June 30, 1879 .....	<u>4,021,411 33</u>

The following tabular statement shows the number of accounts received and audited during the fiscal year:

	Number.	Amount involved.
Accounts on hand June 30, 1878 .....	114	\$11,917,862 37
Accounts received during the year .....	256	26,123,111 64
Total .....	<u>370</u>	<u>38,040,974 01</u>
Accounts reported to the Second Comptroller .....	281	25,765,870 58
Accounts on hand unsettled .....	89	12,275,103 43
Total .....	<u>370</u>	<u>38,040,974 01</u>

NOTE.—The 89 unsettled accounts belong to the fiscal year 1879.

Pensioners recorded .....	27,868
Pensioners transferred .....	931
Pensioners increased .....	6,770
Pensioners restored .....	752
Certificates reissued .....	924
Changes noted .....	1,187
Corrections made .....	2,247
Pension vouchers examined .....	968,191
Payments entered .....	928,182
Pages of abstract added .....	30,833
Pages of miscellaneous copied .....	1,558
Payments corrected .....	436
Copies of surgeons' certificates sent to Commissioner .....	227
Vouchers withdrawn from files .....	5,134
Letters received and registered .....	3,315
Letters written .....	3,897
Letters copied and indexed .....	3,237
Pension checks verified before payment, 190, amounting to .....	\$5,323 82
Pension checks reported for cover to outstanding liabilities, 225, amounting to .....	\$4,803 42
Settlements for "lost checks" made, 51, amounting to .....	\$2,892 00

The following tabular statement exhibits the number and amount of accounts on hand and unsettled July 1, 1869, together with those received and audited each fiscal year since:

	Number.	Amount involved.	Number.	Amount involved.
On hand July 1, 1869.....	637	\$34,811,593 83		
Received during fiscal year 1870.....	714	27,743,819 29	631	\$25,506,876 39
Received during fiscal year 1871.....	930	28,513,262 44	789	32,813,334 28
Received during fiscal year 1872.....	684	28,661,567 26	909	40,000,205 68
Received during fiscal year 1873.....	711	28,750,702 92	795	33,925,556 19
Received during fiscal year 1874.....	861	29,708,352 26	785	26,431,956 71
Received during fiscal year 1875.....	798	29,572,855 54	619	19,888,428 52
Received during fiscal year 1876.....	741	28,348,161 99	1,150	48,433,036 92
Received during fiscal year 1877.....	834	27,809,359 30	852	34,967,985 43
Received during fiscal year 1878.....	538	33,194,149 18	715	24,133,591 62
Received during fiscal year 1879.....	250	20,123,111 64	281	25,765,870 58
On hand and received.....	7,707	323,332,945 65	7,618	811,057,842 22
Amount audited.....	7,618	311,057,842 22		
Balance on hand June 30, 1879.....	89	12,275,103 43		

Congress, under act March 1, 1879, authorized the amount withheld from pensioners under act March 3, 1865, by reason of being in the civil employ of the government, to be refunded, and in nearly every case the amount due had to be verified by this office before payment could be made by the agents for paying pensions. The acts granting "arrears of pension" added a vast amount of labor to this division, and the force employed thereon was not increased in proportion to the amount of extra duty required, as was done in the office of the Commissioner of Pensions. These, combined, have caused an accumulation of work, and with the present force it cannot be kept up, although the clerks on this division are doing the best in their power to facilitate official business. The force employed during the year numbered thirty-eight clerks and two copyists. The following tabular statements exhibit the amount disbursed by the several agents, and the unexpended balances in their hands during and at the close of the fiscal year.

\* \* \* \* \*

#### THE FILES.

There are now 178,742 money settlements, comprising accounts of quartermasters, commissaries of subsistence, engineer officers, agents for paying pensions, and miscellaneous claims. The property and provision returns of Army officers aggregate about 50,000 more. Of these settlements, 6,117 (and 3,365 property returns) have been added during the fiscal year. The papers are in fair condition, but much inconvenience is felt for want of additional rooms and appurtenances. The current pension vouchers now have to be placed upon the floor, as no shelving can be spared for them. It is hoped that after the Bureau of Engraving and Printing shall be removed to its new building, proper accommodations may be furnished for these valuable papers, where their frequent examination will involve as little wear and tear as possible. Some of these papers have been mutilated by handling, and should be bound to prevent further disintegration.

There were nine lady copyists usefully employed during the year. The number of miscellaneous papers registered was 4,700; difference sheets registered, 606; total, 5,306. Miscellaneous papers copied and compared, 13,447 pages; difference sheets compared, 2,349; letters recorded and compared, 3,289; papers copied in pension division, 5,022; total, 24,107. Number of names indexed, 21,843.

I respectfully renew the suggestion often made by my predecessors as to the necessity of some limitation to the time within which claims

against the United States may be presented to the Executive Departments. In the absence of such a check the danger of frauds upon the government increases with every passing year. Most of the stale claims pressed upon this office grew out of the operations of the Army during the late rebellion, or in other wars of many years ago. To thoroughly sift these claims as public interest demands it is becoming daily more difficult. On the other hand, as the danger of detection grows less through the lapse of time, the temptation to present and the facilities for establishing fraudulent claims increase.

Statutes of limitation are no longer looked upon with disfavor by courts or legislative bodies, and provisions of this kind respecting suits between individuals are, I believe, nearly universal. That which is everywhere conceded to be wise and just as between citizens of a State can but be considered fair and just as between the citizen and the State.

Few claims that are fair and honest fail of presentation within six years from their origin, and the claimant who waits longer, if laboring under no legal disability, should be barred, in my opinion. One thing is certain—no one can be familiar with the business of this office for any period, however brief, without being thoroughly convinced that such a limitation would be of great value as a protection to the Public Treasury, would remove a great temptation from the viciously inclined, and would give much needed relief to the Executive Departments.

Respectfully submitted.

E. W. KEIGHTLEY,  
*Auditor.*

HON. JOHN SHERMAN,  
*Secretary of the Treasury.*

## REPORT OF THE FOURTH AUDITOR OF THE TREASURY.

TREASURY DEPARTMENT,  
FOURTH AUDITOR'S OFFICE,  
Washington, November 1, 1879.

SIR: I have the honor to submit the following tables indicating the work of this office for the fiscal year ending June 30, 1879:

### PAYMASTERS' AND MARINE ACCOUNTS.

(GEORGE L. CLARK, Chief.)

*Statement of the work performed by the paymasters' division for the fiscal year ending June 30, 1879.*

Date.	Accounts received.	Accounts settled.	Letters received.	Letters written.	Cash vouchers.	Cash disbursements.
1878.						
July .....	28	35	128	110	1,200	\$1,184,149 33
August .....	41	23	104	100	525	472,164 68
September .....	22	34	115	120	682	888,430 72
October .....	28	32	137	125	910	952,616 50
November .....	38	20	104	113	870	932,289 05
December .....	15	27	70	66	694	764,594 08
1879.						
January .....	30	25	137	109	1,044	865,216 35
February .....	38	26	112	105	407	464,805 06
March .....	22	21	122	120	750	1,582,731 59
April .....	23	26	119	96	528	650,954 39
May .....	34	23	100	109	688	778,195 06
June .....	24	24	77	83	1,363	1,404,780 87
Total .....	343	316	1,331	1,256	9,661	10,960,927 80

Accounts on hand July 1, 1878 ..... 43  
Accounts on hand June 30, 1879 ..... 70

SING PAYMASTERS' AND ALLOTMENT ACCOUNTS.

(WILLIAM F. STIDHAM, Chief.)

performed by the Navy pay and allotment division for the fiscal year ending June 30, 1879.

	Accounts received.	Accounts settled.	Letters received.	Letters written.	Amount involved.
	36	37	210	204	\$1,126,847 44
	16	11	160	147	22,554 07
	5	5	224	206	149,106 03
	9	8	197	205	285,541 33
	6	8	237	234	941,252 52
	10	9	213	210	784,505 73
	6	6	202	216	241,255 51
	10	11	194	189	943,142 73
	21	25	210	202	413,875 94
	25	20	211	183	182,831 74
	11	9	237	208	621,424 00
	6	10	178	161	824,640 15
	161	168	2,479	2,365	6,537,067 19

Allotment accounts.

Date.	Allotments registered.	Allotments discontinued.
1878.	52	156
	34	76
	39	89
	137	136
	236	108
	250	84
1879.	95	123
	89	116
	168	107
	84	91
	80	113
	70	77
	1,334	1,276

aid at Navy pay offices for allotments during the year 1878.

	\$129,500 00
	77,751 50
	74,398 00
	73,018 00
	21,292 00
	18,300 00
	10,757 00
	405,016 50
ing on hand June 30, 1879, 507; number of vouchers examined	



## BOOKKEEPER'S DIVISION.

(PARIS II. FOLSON, Chief.)

*Statement of the work performed by the bookkeeper's division for the fiscal year ending June 30, 1879.*

Date.	Number of pay requi- sitions.	Amount of pay requi- sitions.	Number of repay requisition.	Amount of repay requisitions.	Letters received.	Letters written.	Accounts journalized, entered, and balanced.	Ledger extracts for settlements.	Answers to inquiries for accounts on ledgers.	Accounts received.	Accounts settled.	Summary statements entered.	Checkages entered and ordered.	Amount of checkages.
1878.														
July .....	240	\$2,182,315 70	44	\$130,530 69	238	361	163	45	100	1	1	97	17	\$101 16
August .....	165	1,679,246 45	36	156,012 44	178	327	15	24	102	.....	.....	31	1	21 44
September .....	157	1,188,040 03	20	25,016 49	201	317	20	62	76	.....	.....	49	15	128 78
October .....	189	1,516,667 90	32	305,333 31	176	335	17	35	40	.....	.....	80	10	262 48
November .....	117	1,788,530 32	19	99,627 37	157	298	21	44	47	.....	.....	85	15	126 39
December .....	180	1,080,040 60	11	35,687 00	134	277	134	77	61	2	2	148	6	53 25
1879.														
January .....	177	1,807,186 92	65	1,060,792 01	151	318	82	37	54	1	1	71	12	64 76
February .....	190	2,270,036 45	46	705,838 82	161	268	37	36	76	.....	.....	62	10	1,584 34
March .....	202	2,369,636 72	38	933,001 24	151	260	35	42	114	.....	.....	75	21	504 50
April .....	135	1,347,813 39	56	1,040,357 75	172	216	89	80	207	.....	.....	81	9	434 31
May .....	271	2,352,430 46	30	400,187 35	148	341	71	49	291	1	1	64	25	205 23
June .....	211	6,293,950 53	26	5,191,715 21	160	307	33	40	215	4	4	40	8	32 01
Total .....	2,224	25,931,960 56	423	10,113,089 68	2,027	3,725	737	530	1,383	9	9	823	167	3,008 65

PRIZE-MONEY AND RECORD DIVISION.

(BENJAMIN P. DAVIS, Chief.)

performed by the prize-money and record division for the fiscal year ending June 30, 1879.

Letters.		Claims.			Amount paid, prize-money.	Records.				
Received.	Written.	Received.	Settled.	Rejected.		Letters keyed in.	Letters keyed out.	Letters recorded.	Letters indexed.	Dead let- ters reg- istered.
128	141	17	14	.....	\$1,042 77	1,275	1,261	1,547	2,316	6
143	169	16	16	.....	933 98	1,136	1,264	1,443	2,448	5
143	178	16	15	.....	715 48	1,230	1,227	3,569	4,196	9
141	173	23	21	.....	1,434 82	1,102	1,243	3,764	4,315	13
120	142	20	18	.....	1,658 05	1,088	1,205	4,610	5,468	2
100	109	59	59	.....	1,367 58	941	982	2,466	3,329	6
140	164	27	27	.....	1,042 12	1,072	1,260	3,701	4,864	4
234	267	26	26	.....	1,426 14	1,814	1,320	2,454	4,176	2
221	277	27	27	.....	950 03	2,206	2,079	2,038	3,309	6
186	252	18	17	.....	719 98	1,859	1,890	1,800	4,164	16
162	178	35	21	14	932 08	1,330	1,629	1,450	4,101	11
132	159	31	22	8	1,087 73	1,769	1,642	1,586	3,767	6
850	2,209	315	283	22	13,810 71	16,337	17,002	30,448	46,453	86

is charged also with the preparation of all reports and  
its called for by Congress and the Secretary of the  
g a record of appointments, resignations, removals, and  
e and issuing of stationery used in the office, and the  
ies to employés.

NTY, ARREARS OF PAY, AND GENERAL CLAIMS.

(ROBERT KRABON, Chief.)

performed by the general claims division for the fiscal year ending June 30, 1879.

	Claims received.	Claims adjusted.	Amount involved.	Letters received.	Letters written.	Reports on appli- cation for pen- sion.	Reports on appli- cation for bounty land.	Reports on admis- sion to Naval Asylum.
.....	88	.....	.....	.....	.....	.....	.....	.....
.....	91	107	\$12,359 34	493	466	14	.....	.....
.....	132	129	11,241 06	455	504	27	.....	.....
.....	76	81	8,345 06	506	335	42	.....	.....
.....	88	72	15,787 13	343	370	73	.....	.....
.....	71	75	10,657 32	382	330	81	.....	.....
.....	43	61	13,040 93	374	296	27	.....	.....
.....	60	44	15,145 29	367	416	14	.....	.....
.....	95	69	7,870 76	524	461	47	.....	1
.....	206	95	9,529 62	1,411	1,125	76	.....	1
.....	310	175	11,325 23	1,169	1,066	47	.....	1
.....	179	103	9,690 57	1,049	779	80	.....	1
.....	157	291	11,802 83	712	853	59	.....	.....
.....	1,037	1,305	136,195 77	7,895	6,984	608	.....	14

## BOOKKEEPER'S DIVISION.

(PAUL H. FOLSON, Chief.)

Statement of the work performed by the bookkeeper's division for the fiscal year ending June 30, 1879.

Date.	Number of pay requisitions.	Amount of pay requisitions.	Number of repay requisitions.	Amount of repay requisitions.	Letters received.	Letters written.	Accounts journalized, entered, and balanced.	Ledger extracts for ledger settlements.	Answers to inquiries for accounts on ledgers.	Accounts received.	Accounts settled.	Summary statements entered.	Checks entered and ordered.	Amount of checkings.
1878.														
July.....	240	\$2,182,315.70	44	\$120,520.80	238	361	183	45	100	1	1	97	17	\$101.16
August.....	165	1,070,246.45	36	158,012.44	178	327	115	24	102			21	1	21.44
September.....	157	1,188,040.03	30	92,016.40	201	317	20	52	76			40	15	128.78
October.....	187	1,516,627.88	32	303,333.31	176	335	17	35	46			30	10	252.48
November.....	117	1,788,320.32	19	98,627.37	157	298	21	44	47			85	15	126.39
December.....	180	1,086,040.60	11	33,687.00	134	277	134	77	61	2	2	148	6	53.23
1879.														
January.....	177	1,807,186.92	65	1,069,792.01	151	318	82	37	54	1	1	71	12	64.76
February.....	190	2,270,036.45	46	705,858.82	161	268	37	30	76			52	10	1,584.34
March.....	202	2,369,085.72	38	953,001.24	151	260	35	42	114			75	21	504.50
April.....	135	1,347,813.39	56	1,046,357.75	172	316	89	30	207			81	9	434.31
May.....	271	2,552,436.46	30	400,187.85	148	341	71	49	291	1	1	64	25	205.23
June.....	211	6,200,930.53	26	5,191,715.21	100	307	33	40	215	4	4	40	8	32.01
Total.....	2,224	25,031,960.56	423	10,113,089.68	2,027	3,725	737	530	1,383	9	9	823	157	3,008.05

PRIZE-MONEY AND RECORD DIVISION.

(BENJAMIN P. DAVIS, Chief.)

performed by the prize-money and record division for the fiscal year ending June 30, 1879.

Letters.		Claims.			Amount paid, prize-money.	Records.				
Received.	Written.	Received.	Settled.	Rejected.		Letters keyed in.	Letters keyed out.	Letters recorded.	Letters indexed.	Dead let- ters reg- istered.
128	141	17	14	....	\$1,642 77	1,275	1,261	1,547	2,316	6
143	169	16	16	....	933 08	1,136	1,264	1,443	2,448	5
143	178	16	15	....	715 48	1,236	1,227	3,569	4,190	9
141	173	23	21	....	1,434 82	1,102	1,243	3,704	4,315	13
120	142	20	18	....	658 05	1,088	1,205	4,610	5,468	2
100	109	59	59	....	1,367 53	941	982	2,466	3,329	6
140	164	27	27	....	1,942 12	1,072	1,260	3,701	4,864	4
234	267	26	26	....	1,426 14	1,314	1,320	2,454	4,170	2
221	277	27	27	....	950 03	2,206	2,079	2,038	3,309	0
186	252	18	17	....	719 98	1,850	1,890	1,800	4,164	16
162	178	35	21	14	932 08	1,359	1,629	1,450	4,101	11
132	159	31	22	8	1,087 73	1,769	1,642	1,586	3,767	0
1,550	2,200	315	283	22	13,810 71	16,337	17,002	30,448	46,453	86

is charged also with the preparation of all reports and  
nts called for by Congress and the Secretary of the  
ng a record of appointments, resignations, removals, and  
re and issuing of stationery used in the office, and the  
ries to employés.

COUNTY, ARREARS OF PAY, AND GENERAL CLAIMS.

(ROBERT KEARON, Chief.)

rk performed by the general claims division for the fiscal year ending June 30, 1879.

Claims received.	Claims adjusted.	Amount involved.	Letters received.	Letters written.	Reports on appli- cation for pen- sion.	Reports on appli- cation for bounty land.	Reports on admis- sion to Naval Academy.
58	107	\$12,359 34	493	466	14	.....	.....
132	129	11,241 69	455	504	27	.....	3
76	81	8,315 06	566	535	42	.....	3
83	72	15,787 13	363	570	63	.....	3
71	75	10,057 32	382	394	21	.....	1
43	61	13,040 63	374	396	27	.....	1
66	44	15,145 29	367	416	14	.....	1
95	69	7,870 76	324	401	47	.....	1
206	97	9,329 62	1,411	1,125	76	.....	1
310	175	11,325 25	1,169	1,009	47	.....	1
179	103	9,639 57	1,072	779	80	.....	1
157	291	11,802 83	712	663	96	.....	.....
1,637	1,305	136,195 77	7,805	6,984	608	.....	14

## NAVY PENSION ACCOUNTS.

(RICHARD GOODHART, *Chief.*)*Statement of the work performed by the Navy pension division for the fiscal year ending June 30, 1879.*

Date.	Accounts received.	Accounts settled.	Letters received.	Letters written.	Amount involved.
1878.					
July .....	10	24	73	39	\$38,708 27
August .....	14	17	90	17	18,203 60
September .....	4	6	47	41	51,108 00
October .....	20	27	58	33	153,710 81
November .....	19	19	88	28	41,069 89
December .....	12	.....	44	24	.....
1879.					
January .....	6	10	45	37	42,741 20
February .....	11	17	80	30	39,601 31
March .....	36	18	61	95	61,598 59
April .....	11	15	62	24	29,705 06
May .....	16	24	103	46	41,998 72
June .....	12	13	50	36	58,082 45
Total .....	173	190	845	469	547,528 46

Pension agencies.	Number of Navy invalid pensioners.	Number of widow pensioners and dependent relatives.	Total number of Navy pensioners.	Disbursements at each agency for the year ending June 30, 1879.
Boston, Mass. ....	456	467	923	\$107,625 81
Columbus, Ohio .....	47	115	162	19,911 01
Concord, N. H. ....	136	127	263	35,003 63
Chicago, Ill. ....	69	46	115	14,720 24
Detroit, Mich. ....	23	21	47	7,248 85
Knoxville, Tenn. ....	42	81	123	18,698 33
New Orleans, La. ....	25	28	54	5,985 78
Louisville, Ky. ....	9	16	25	3,267 16
Milwaukee, Wis. ....	23	27	50	7,795 41
New York City, N. Y. ....	448	468	916	105,739 18
Pittsburg, Pa. ....	31	44	75	11,193 17
Philadelphia, Pa. ....	292	306	598	83,100 80
San Francisco, Cal. ....	46	27	73	7,167 03
Saint Louis, Mo. ....	25	27	52	8,470 26
Washington, D. C. ....	350	450	800	107,320 65
Total .....	2,622	2,313	4,935	543,487 91

Number of accounts on hand June 30, 1879, 14.

The business of this bureau has been kept well in hand, and is now in good shape, for which much credit is due to the deputy auditor, William B. Moore, to the chiefs of divisions, and to the clerks and employes generally for the faithful and efficient manner in which they have discharged their respective duties.

I have the honor to be, very respectfully, your obedient servant,

CHAS. BEARDSLEY,

*Auditor.*

Hon. JOHN SHERMAN,  
*Secretary of the Treasury.*

## REPORT OF THE FIFTH AUDITOR OF THE TREASURY.

TREASURY DEPARTMENT,  
FIFTH AUDITOR'S OFFICE,  
Washington, November 1, 1879.

SIR: Herewith are submitted the operations of this office for the fiscal year ending June 30, 1879.

\* \* \* \* \*

The adjustments required the examination of ninety-one thousand five hundred and seventy-one vouchers, amounting to \$661,943,492.73, and were made with commendable promptness. The clerks employed in the office are entitled to my thanks for strict regard to the interests of the government and attention to the duties committed to their care.

Very respectfully, your obedient servant,

J. H. ELA, Auditor.

Hon. JOHN SHERMAN,  
*Secretary of the Treasury.*

NOTE.—The tables pertaining to this Report are omitted for want of space, but they are printed in the pamphlet edition of the Auditor's report.

## REPORT OF THE SIXTH AUDITOR OF THE TREASURY.

OFFICE OF THE AUDITOR OF THE TREASURY,  
FOR THE POST-OFFICE DEPARTMENT,  
Washington, October 22, 1879.

SIR: I have the honor to submit the following report of the business operations of this office for the fiscal year ended June 30, 1879. My annual report to the Postmaster-General, now in course of preparation, will exhibit in detail the financial transactions of the Post-Office Department during the past fiscal year. The following is a summary of the principal labors performed by the several divisions during the year, viz:

EXAMINING DIVISION.—(Benjamin Lippincott, chief.)

The business of the Examining Division for the last fiscal year has been fully completed, and the following tables exhibit, as far as may be, the work performed:

Number of quarterly accounts-current received during the fiscal year:

Quarter ending September 30, 1878.....	38,841
Quarter ending December 31, 1878.....	39,905
Quarter ending March 31, 1879.....	40,821
Quarter ending June 30, 1879.....	40,874

Total ..... 160,441

Increase ..... 7,305

Number of accounts settled by stamp-clerks during the fiscal year:

Quarter ending September 30, 1878.....	38,365
Quarter ending December 31, 1878.....	39,505
Quarter ending March 31, 1879.....	40,313
Quarter ending June 30, 1879.....	40,369

Total ..... 158,552

Increase ..... 6,341

Number of accounts-current examined and passed to the Registering Division during the fiscal year:

Quarter ending September 30, 1878.....	38,365
Quarter ending December 31, 1878.....	39,505
Quarter ending March 31, 1879.....	40,313
Quarter ending June 30, 1879.....	40,369

Total ..... 158,552

Increase ..... 6,341

Amount involved in the settlement of quarterly accounts:

Quarter ending September 30, 1878.....	\$6,808,843 54
Quarter ending December 31, 1878.....	7,407,058 05
Quarter ending March 31, 1879.....	7,788,655 12
Quarter ending June 30, 1879.....	7,358,344 23

Total ..... 29,362,900 94

Increase ..... 683,237 83

Number of post-offices of the first and second classes receiving allowances for clerk hire, light, fuel, rent, &c..... 425

Number of post-offices of the third and fourth classes receiving allowances for clerk hire for separating the mails..... 1,029

Total number of post-offices of all classes receiving allowances ..... 1,454

#### REGISTERING DIVISION.—(Joseph B. Will, chief.)

During the fiscal year ended June 30, 1879, the number of accounts registered and amounts therein involved were as follows:

Third quarter, 1878.....	38,365	\$6,808,843 54
Fourth quarter, 1878.....	39,505	7,407,058 05
First quarter, 1879.....	40,313	7,788,655 12
Second quarter, 1879.....	40,369	7,358,344 23

Total ..... 158,552 29,362,900 94

Increase ..... 6,341 683,237 83

Number of changes of postmasters reported from the appointment office of the Post-Office Department entered during the fiscal year was as follows ..... 11,363

Decrease from the last fiscal year ..... 1,455

#### BOOKKEEPING DIVISION.—(James T. Smith, chief.)

The following tabular statements show the distribution of the work of the division, the increase therein, and, in part, the labor performed in making up the auxiliary books prepared on the division:

##### *Ledgers of mail-contractors' accounts.*

Section.	States.	Number of ledgers.	Current accounts.	Day-book entries journalized.
1	Star and steamboat service in: Maine, New Hampshire, Vermont, Massachusetts, Rhode Island, Connecticut, New York, New Jersey, Pennsylvania, Delaware, Virginia, West Virginia, Maryland, North Carolina, South Carolina, Georgia, Florida, Alabama, and Mississippi.			
2	Railroad and ocean transportation and journalizing.....	6	3,057	6,716
	Star and steamboat service in: Indiana, Illinois, Tennessee, Wisconsin, Ohio, Iowa, Missouri, Kentucky, Michigan, Kansas, Nebraska, Oregon, Minnesota, California, Nevada, Texas, Louisiana, Arkansas, and Territories.	6	3,250	
	Total .....	12	6,307	6,716
	Increase .....		167	2,236

*Ledgers of postmasters' accounts.*

States.	Number of ledgers.	Current accounts.	Late accounts.
Alabama, Vermont, Massachusetts, Connecticut, and Georgia.	5	4, 134	464
Delaware, and Florida.	6	4, 006	501
West Virginia.	5	4, 193	570
Carolina, South Carolina, Maryland, and Virginia.	6	4, 263	510
Louisiana, Texas, Arkansas, and Mississippi.	7	4, 266	1, 028
Kentucky, and Tennessee.	6	4, 264	871
Illinois.	5	3, 020	737
Nebraska.	6	3, 086	761
Minnesota.	5	3, 741	624
Montana, Nevada, Kansas, Colorado, and Territory.	6	4, 143	832
	57	40, 916	6, 898
	6	1, 769	1, 046

*Ledger of general, special, and miscellaneous accounts.*

	Number of accounts.	Amount.
Department for fiscal year 1879.	8	\$30, 041, 982 86
Surplus in aid of the revenues.	1	3, 071, 000 00
		33, 112, 982 86
to appropriations for fiscal year 1879.	42	83, 073, 437 82
for accrued liabilities.		30, 545 04
existing in former years.	16	376, 461 63
executive departments.	6	388, 107 60

*Auxiliary books made up on the division.*

	Number of entries.	Increase over last year.
	4, 821	1, 251
	6, 716	2, 238
at designated post-offices.	18, 181	10, 066
treasury depositories.	10, 116	5, 237
	39, 834	10, 692

Auxiliary books from which entries are made. . . . . 125  
 Number of entries made in ledgers during the year. 528, 707

	Number.	Amount.
the Postmaster-General and countersigned by the registered during the fiscal year.	13, 086	\$3, 533, 440 20
	1, 627	891, 645 57
Third Assistant Postmaster-General and countersigned, passed and registered during the fiscal year.	23, 350	2, 317, 247 33
	5, 356	575, 857 95



## STATING DIVISION.—(Wm. H. Gunnison, chief.)

The statements following show the amount of work performed during the last fiscal year.

*Statement of the number of general postal accounts of postmasters, the increase in the number, and the classification of the officers, for the fiscal year ended June 30, 1879.*

Number of section.	States and Territories.	Presidential offices.					Fourth-class offices.					No. of accounts in each State.	Increase in each State.	No. of accounts in each section.	Increase in each section.
		Draft.	Collection.	Depositing.	Total.	Increase.	Collection.	Depositing.	Special.	Special and depositing.	Total.				
1	Maine .....	3	20	8	31	5	602	252	15	23	691	7	922	12	
	New Hampshire.....	3	15	6	24	*2	301	118	4	3	426	4	450	2	
	Vermont.....	5	14	2	21	1	336	123	3	12	474	1	495	2	
	Massachusetts.....	4	67	36	107	2	458	162	8	10	638	6	745	8	
	Total .....	15	116	52	183	6	1,697	655	30	47	2,420	18		2,612	24
2	New York (A to Q)....	11	97	27	135	3	1,147	630	58	124	1,959	36	2,094	39	
	Nevada.....	0	2	9	11	1	21	73	5	4	103	16	114	17	
	Total .....	11	99	36	146	4	1,168	703	63	128	2,062	52		2,208	56
3	Pennsylvania (A to Q).....	3	77	14	94	0	1,639	638	50	16	2,343	28	2,437	28	
	Dakota.....	0	5	1	6	3	145	90	35	4	274	70	280	73	
	Total .....	3	82	15	100	3	1,784	728	85	20	2,617	98		2,717	101
4	Wisconsin.....	2	54	6	62	4	962	210	57	36	1,265	20	1,327	24	
	West Virginia.....	1	7	0	8	0	636	167	13	0	836	12	844	12	
	Oregon.....	0	6	1	7	0	179	146	22	0	347	25	354	25	
	Total .....	3	67	7	77	4	1,797	523	92	36	2,448	57		2,525	61
5	North Carolina.....	1	11	1	13	2	1,186	128	30	9	1,353	64	1,366	66	
	South Carolina.....	1	10	2	13	1	475	68	11	1	555	22	568	23	
	Georgia.....	2	19	2	23	0	734	105	56	25	940	69	963	69	
6	Total .....	4	40	5	49	3	2,415	301	97	35	2,848	155		2,897	158
	Kansas.....	1	33	11	45	11	911	330	109	0	1,350	156	1,395	167	
	Minnesota.....	2	18	11	31	3	679	154	90	4	927	49	958	52	
	Colorado.....	1	8	7	16	2	143	112	19	3	277	26	293	28	
	Utah Territory.....	0	1	3	4	1	86	90	17	0	193	7	197	8	
7	Total .....	4	60	32	96	17	1,819	686	235	7	2,747	238		2,843	255
	Ohio.....	9	92	8	109	*2	1,613	491	40	51	2,204	6	2,313	4	
	Total .....	9	92	8	109	*2	1,613	491	40	51	2,204	6		2,313	4
8	Illinois.....	3	154	4	161	6	1,584	165	23	31	1,803	10	1,964	16	
	Delaware.....	0	6	0	6	2	79	21	0	1	101	1	107	3	
	District of Columbia.....	0	0	0	0	0	2	2	0	1	5	0	5	0	
	Washington Territory.....	0	2	1	3	0	152	28	5	14	199	30	202	30	
	Montana Territory.....	0	6	0	6	0	50	53	6	1	110	9	125	9	
	Chicago, Ill.....	0	0	1	1	0	0	0	0	0	0	0	1	0	
	Cincinnati, Ohio.....	0	0	1	1	1	0	0	0	0	0	0	1	1	
	Saint Louis, Mo.....	0	0	1	1	1	0	0	0	0	0	0	1	1	
	San Francisco, Cal.....	0	0	1	1	1	0	0	0	0	0	0	1	1	
	New Orleans, La.....	0	0	1	1	1	0	0	0	0	0	0	1	1	
	Washington, D. C.....	0	0	1	1	0	0	0	0	0	0	0	1	0	
	Total .....	3	168	11	182	12	1,876	269	34	48	2,227	50		2,409	62
9	Arkansas.....	0	7	1	8	0	500	295	5	2	892	92	900	92	
	Missouri.....	0	45	3	48	6	1,400	149	21	15	1,564	32	1,642	38	
	Total .....	0	52	4	56	6	1,999	444	26	17	2,486	124		2,542	130

\* Decrease.

number of general postal accounts of postmasters, &c.—Continued.

ies.	Presidential offices.					Fourth-class offices.						No. of accounts in each State.	Increase in each State.	No. of accounts in each section.	Increase in each section.
	Draft.	Collection.	Depositing.	Total.	Increase.	Collection.	Depositing.	Special.	Special and depositing.	Total.	Increase.				
Z)	4	23	8	35	1	639	314	1	10	864	5				
	12	21	5	28	1	970	123	65	33	1,253	36	1,899	0		
	0	0	0	0	0		1	0	0	2	0	1,287	3		
ory	0	1	0	1	0	73	1	8	5	161	6	102	6		
	0	3	0	3	0	42	23	2	1	83	0	91	0		
y	0	1	2	3	*1	17	23	16	1	57	6	60	5		
	6	49	15	70	1	1,756	474	92	49	2,371	53			2,441	54
	1	21	3	25	*1	1,295	351	36	22	1,634	58	1,659	57		
	1	4	6	11	0	61	33	3	2	49	1	110	1		
	0	21	27	48	4	465	283	22	18	788	22	836	26		
	2	46	36	84	3	1,821	597	61	42	2,521	81			2,605	84
	4	66	2	72	5	1,242	328	35	31	1,538	33	1,610	38		
	1	36	15	52	1	455	129	10	32	626	2	878	3		
	5	102	17	124	6	1,097	357	45	65	2,164	35			2,288	41
	9	81	5	97	2	1,220	146	37	14	1,417	39	1,514	41		
	2	37	1	40	0	833	294	32	16	1,175	55	1,215	55		
	0	2	1	3	1	30	37	12	0	79	26	82	27		
	11	122	7	140	3	2,083	477	81	30	2,671	120			2,811	123
	1	2	4	7	*1	230	59	13	0	302	37	309	36		
	0	8	1	9	0	297	97	12	7	413	28	422	28		
	0	16	4	20	4	549	77	14	2	642	37	662	41		
	3	12	1	16	*1	985	201	92	21	1,299	77	1,315	76		
	4	38	10	52	2	2,061	484	131	30	2,656	170			2,708	181
	9	60	12	81	8	1,031	112	42	62	1,247	25	1,328	33		
	0	7	5	12	1	483	151	12	12	658	28	670	20		
	2	28	19	49	5	288	94	3	11	396	*2	445	3		
	0	0	1	1	1	0	0	0	0	0	0	1	1		
	0	0	1	1	1	0	0	0	0	0	0	1	1		
	0	0	1	1	1	0	0	0	0	0	0	1	1		
	0	0	1	1	1	0	0	0	0	0	0	1	1		
	0	0	1	1	0	0	0	0	0	0	0	1	1		
	0	0	1	1	0	0	0	0	0	0	0	1	1		
	11	95	41	147	18	1,802	357	57	85	2,301	51			2,448	69
Z)	4	32	13	49	1	453	234	45	37	769	0	818	1		
	3	14	4	21	3	921	126	22	4	1,073	27	1,004	30		
	1	15	7	23	6	412	195	36	2	645	17	688	23		
	8	61	24	93	10	1,786	555	103	43	2,487	44			2,580	54

\*Decrease.

*Statement of the number of general postal accounts of postmasters, &c.—Continued.*

## RECAPITULATION.

Number of general accounts of the first, second, and third classes, June 30, 1879 .....					1, 708	
Number of general accounts of the fourth class, June 30, 1879 .....					39, 239	
Total number of accounts .....						40, 947
Number of general accounts of the first, second, and third classes, June 30, 1878 .....				1, 612		
Number of general accounts of the first, second, and third classes made fourth class July 1, 1878 .....		42				
Number of general accounts of the first, second, and third classes made fourth class September 13, 1878 .....		2				
Number of general accounts of the first, second, and third classes made fourth class November 20, 1878 .....		1				
Number of general accounts of the first, second, and third classes made fourth class January 1, 1879 .....		9				
Number of general accounts of the first, second, and third classes made fourth class April 1, 1879 .....		1				
				55	1, 557	
Number of general accounts of the fourth class made Presidential October 1, 1878 .....	1					
Number of general accounts of the fourth class made Presidential January 1, 1879 .....	146					
Number of general accounts of the fourth class made Presidential April 1, 1879 .....	4				151	
Total number of Presidential accounts June 30, 1879 .....						1, 708
Increase in the number of general accounts of the first, second, and third classes .....					96	
Increase in the number of general accounts of the fourth class .....					1, 361	
Total increase .....						1, 457

	Draft.	Collection.	Depositing.	Special.	Special and depositing.	Totals.
Total number of draft offices (Presidential) .....	99					
Total number of collection offices (Presidential) .....		1, 289				
Total number of depositing offices (Presidential) .....			320			
Total Presidential offices .....	99	1, 289	320			1, 708
Total number of collection offices (fourth class) .....		29, 174				
Total number of depositing offices (fourth class) .....			8, 051			
Total number of special offices (fourth class) .....				1, 281		
Total number of special and depositing offices (fourth class) .....					733	
Total fourth-class offices .....		29, 174	8, 051	1, 281	733	39, 239
Total offices .....						40, 947

*Statement showing the number of changes of offices and postmasters during the fiscal year ended June 30, 1879.*

Changes.	Quarter ending—				Totals.
	September 30, 1878.	December 31, 1878.	March 31, 1879.	June 30, 1879.	
Offices established .....	446	392	576	834	2, 248
Offices re-established .....	77	81	105	128	301
Offices discontinued .....	254	229	282	317	1, 182
New bonds .....	217	306	431	634	1, 588
Miscellaneous .....	1, 104	1, 930	2, 249	2, 024	7, 307
Totals .....	2, 188	3, 038	3, 643	3, 937	12, 806

*Condition of the general postal accounts of late postmasters for the fiscal year ended June 30, 1879.*

	Quarter ending—				Totals.
	September 30, 1878.	December 31, 1878.	March 31, 1879.	June 30, 1879.	
Postmasters adjusted during the year.	2,481	2,445	2,464	1,707	9,097
Postmasters unadjusted at close of year.					8,505
					17,602
Balance of late accounts over year.					1,310
Balance of late accounts reported last year.					19
Balance of late accounts unreported last year.					1,113

*Equates, per quarter, of the balances due the United States for the postal instructions were issued requiring postmasters to include such sums in their reports, according to the respective classification of their offices.*

	Number.	Amount.
September 30, 1878.	1,300	\$71,007 92
December 31, 1878.	2,331	78,719 35
March 31, 1879.	1,188	63,322 06
June 30, 1879.	1,798	148,931 34
Total year.	6,617	361,980 67

# COLLECTING DIVISION.—(E. J. Evans, chief.)

*Summary of principal work on this division for the fiscal year.*

	Number.	Amount.
Present postmasters during the fiscal year:		
September 30, 1878.	570	\$85,125 35
December 31, 1878.	331	43,874 68
March 31, 1879.	510	71,036 94
June 30, 1879.	731	90,553 86
	2,142	290,590 83
	56	25,447 15
Amount upon which drafts were issued:		
September 30, 1878.	47	146,802 08
December 31, 1878.	15	8,422 87
March 31, 1879.	24	1,666 01
June 30, 1879.	15	104,356 14
	101	259,248 00
	96	154,727 20
Present postmasters reported for payment:		
September 30, 1878.	198	5,009 75
December 31, 1878.	382	8,174 35
March 31, 1879.	97	6,522 30
June 30, 1879.	300	8,173 08
	977	27,880 08
	650	10,967 31
Postmasters and contractors submitted for suit during fiscal year:		
September 30, 1878.	10	2,700 86
December 31, 1878.	12	6,824 23
March 31, 1879.	24	36,300 37
June 30, 1879.	10	36,112 42
	56	82,123 88
Amount of judgments, &c., including interest, during the fiscal year.		22,204 79

**Accounts copied during the fiscal year:**

Quarter ended September 30, 1878 .....	4,375
Quarter ended December 31, 1878 .....	5,577
Quarter ended March 31, 1879 .....	4,493
Quarter ended June 30, 1879 .....	5,640
<b>Total</b> .....	<b>20,085</b>
<b>Increase</b> .....	<b>611</b>

**Letters received during the fiscal year:**

Quarter ended September 30, 1878 .....	83,324
Quarter ended December 31, 1878 .....	78,993
Quarter ended March 31, 1879 .....	87,652
Quarter ended June 30, 1879 .....	79,670
<b>Total</b> .....	<b>329,639</b>
<b>Decrease</b> .....	<b>9,265</b>

**Letters sent during the fiscal year:**

Quarter ended September 30, 1878 .....	84,673
Quarter ended December 31, 1878 .....	53,229
Quarter ended March 31, 1879 .....	56,381
Quarter ended June 30, 1879 .....	62,505
<b>Total</b> .....	<b>256,788</b>
<b>Increase</b> .....	<b>76,352</b>

**Number of circulars addressed and transmitted during the fiscal year:**

Quarter ended September 30, 1878 .....	8,327
Quarter ended December 31, 1878 .....	12,690
Quarter ended March 31, 1879 .....	10,676
Quarter ended June 30, 1879 .....	11,615
<b>Total</b> .....	<b>43,308</b>
<b>Decrease</b> .....	<b>1,490</b>

**FOREIGN MAIL DIVISION.—(R. S. Widdicombe, chief.)**

This division has charge of the postal accounts with foreign countries, and the accounts with steamship companies for ocean transportation of the mails.

*Amounts paid the United States on the settlement of postal accounts with foreign governments.*

United Kingdom of Great Britain and Ireland .....	\$43,063 48
Japan .....	8,637 07
Canada .....	926 24
Spain .....	758 93
Empire of Germany .....	699 54
Queensland .....	76 30
Italy .....	72 81
Switzerland .....	52 70
Belgium .....	41 78
Netherlands .....	36 76
Norway .....	32 90
Sweden .....	25 54
Austria .....	24 15
Denmark .....	21 06

**Total amount received** ..... 54,469 30

*Amounts paid foreign governments on the settlement of postal accounts.*

Belgium .....	\$13,266 22
Empire of Germany .....	7,259 87
Republic of France .....	5,246 56
Denmark .....	3,209 51
Italy .....	2,555 94
St. Thomas .....	1,575 82
Sweden .....	1,326 00

**Total amount paid** ..... 34,730 96

Number of duplicates registered during the fiscal year.

Quarter ended—				Received from—	Quarter ended—			
September 30, 1878.	December 31, 1878.	March 31, 1879.	June 30, 1879.		September 30, 1878.	December 31, 1878.	March 31, 1879.	June 30, 1879.
356	369	368	370	The United Kingdom				
232	241	217	227	German Empire				
187	180	163	181	France				
131	138	123	120	Belgium				
52	52	52	52	Denmark				
73	76	72	73	Spain				
73	77	73	73	Switzerland				
52	53	50	51	Norway				
82	84	80	82	Netherlands				
41	41	38	39	Sweden				
73	77	73	74	Italy				
219	254	288	385	West Indies, &c	103	118	122	99
1,571	1,642	1,597	1,727	Total	103	118	122	99
149	176	55	125	Increase	31	82	14	9

Applicants registered	6,979
of ocean postages made to the Postmaster-General	591
	234
	30
Total	\$215,306 24
	5,141 52

PAY DIVISION.—(R. F. Crowell, chief.)

made to the following tabular statement showing quar-  
ter and amount of collections made, and the number and  
cents adjusted and reported during the fiscal year ended

	No.	Amount.
Companies for transporting the mails, settled during the fiscal year:		
September 30, 1878	940	\$2,320,024 33
December 31, 1878	962	2,339,152 19
March 31, 1879	975	2,368,408 68
June 30, 1879	1,004	2,414,900 06
	3,890	9,438,085 86
	223	523,592 81
For railroad companies, and amounts paid thereon by post- office:		
September 30, 1878	11,594	806,293 16
December 31, 1878	11,725	1,044,279 24
March 31, 1879	11,650	1,108,395 92
June 30, 1879	11,737	1,030,680 83
	46,712	4,095,549 25
	2,077	285,151 16
For contractors and subcontractors, steamboat service, settled during the fiscal year:		
September 30, 1878	105	171,873 44
December 31, 1878	115	187,642 21
March 31, 1879	104	164,257 98
June 30, 1879	114	184,243 30
	438	708,016 93

	No.	Amount.
<b>Collection orders sent to mail-contractors, steamboat service, and the amounts paid thereon by the postmasters during the fiscal year:</b>		
Quarter ended September 30, 1878	532	\$15,789 06
Quarter ended December 31, 1878	619	15,946 68
Quarter ended March 31, 1879	645	21,125 98
Quarter ended June 30, 1879	648	20,523 53
Total	2,464	75,385 25
<b>Accounts of mail-contractors and subcontractors, star service, settled during the fiscal year:</b>		
Quarter ended September 30, 1878	9,950	1,212,480 62
Quarter ended December 31, 1878	10,381	1,288,890 66
Quarter ended March 31, 1879	10,835	1,440,198 40
Quarter ended June 30, 1879	10,805	1,490,777 27
Total	41,971	5,434,346 95
Increase	5,865	
Decrease		311,064 25
<b>Collection orders sent to mail-contractors, star service, and amounts paid thereon by postmasters, during the fiscal year:</b>		
Quarter ended September 30, 1878	20,400	248,209 52
Quarter ended December 31, 1878	18,411	225,964 84
Quarter ended March 31, 1879	17,508	236,545 07
Quarter ended June 30, 1879	16,509	198,760 39
Total	72,828	909,479 80
Decrease	12,475	625,284 31
<b>Accounts of ocean mail and consular postal service settled during the fiscal year:</b>		
Quarter ended September 30, 1878	57	61,843 32
Quarter ended December 31, 1878	51	49,313 13
Quarter ended March 31, 1879	57	56,889 13
Quarter ended June 30, 1879	47	42,139 63
Total	212	210,185 21
Decrease	7	7,578 94
<b>Number and amount of settlements of special carriers' accounts during the fiscal year:</b>		
Quarter ended September 30, 1878	1,038	9,790 97
Quarter ended December 31, 1878	1,218	8,561 43
Quarter ended March 31, 1879	1,215	8,740 71
Quarter ended June 30, 1879	1,246	9,129 78
Total	4,717	36,222 89
Decrease	260	29,490 71
<b>Number and amount of settlements of mail-messengers during the fiscal year:</b>		
Quarter ended September 30, 1878	4,447	166,467 80
Quarter ended December 31, 1878	4,324	180,364 79
Quarter ended March 31, 1879	4,531	165,646 08
Quarter ended June 30, 1879	4,660	167,907 45
Total	17,962	680,476 18
Increase	631	11,542 97
<b>Number and amount of settlements of accounts of superintendents, assistant superintendents of railway postal service, and special agents of the Post-Office Department during the fiscal year:</b>		
Quarter ended September 30, 1878	185	42,617 65
Quarter ended December 31, 1878	218	44,274 79
Quarter ended March 31, 1879	198	40,870 26
Quarter ended June 30, 1879	213	46,359 64
Total	824	174,062 34
Increase	89	
Decrease		6,206 56

	No.	Amount.
of settlements of accounts of railway postal clerks, route-messengers, and local mail-agents during the fiscal year:		
September 30, 1878.....	3,009	\$674,635 03
December 31, 1878.....	2,934	685,379 82
March 31, 1879.....	3,002	602,526 10
June 30, 1879.....	2,820	644,524 71
	11,765	2,667,065 66
	291	170,401 83
of settlements of accounts for free-delivery system dur-		
September 30, 1878.....	2,466	400,063 65
December 31, 1878.....	2,546	408,432 41
March 31, 1879.....	2,583	408,411 82
June 30, 1879.....	2,372	473,064 15
for first and second quarters 1879.....	1,783	73,219 27
	11,749	1,942,261 30
	2,337	124,385 71
t of settlements of accounts of miscellaneous payments		
September 30, 1878.....	297	257,084 60
December 31, 1878.....	215	210,929 52
March 31, 1879.....	207	242,022 04
June 30, 1879.....	201	204,643 31
	920	914,079 47
	24	70,180 03

ONEY-ORDER DIVISION.—(John Lynch, chief.)

the principal transactions of the division during the fiscal year ended June 30, 1879.

	Number.	Value.	Increase.		Decrease.	
			Number.	Value.	Number.	Value.
der state-						
examined,						
issued,	225,248		13,139			
al money-	6,372,243	\$88,254,641 02	639,126	\$6,812,276 15		
money-	16,231	316,283 98	2,645	50,901 55		
al money-	64,310	894,859 25	8,964	87,675 93		
money-or-	47,342	829,788 36	4,028	46,371 52		
money-	5,135	96,171 25	542	3,890 51		
received,	4,070	103,352 11	121			\$2,081 42
checked,						
	6,360,611	87,427,047 26	781,270	6,655,592 06		
ditional.	20,757	339,072 45	623			112 44
onal.	19,740	245,761 09			1,427	17,442 09
onal.	25,402	639,512 68			3,949	27,270 02
al.	2,010	56,829 99		2,034 27	43	
al.	349	10,040 69	CS	2,169 27		
received,						
checked,						
	41,609	571,714 98	6,567	63,259 38		
ditional.	59	906 42			6	220 02
onal.	128	2,242 07			75	718 40
onal.	145	3,630 34			129	606 46
al.	17	459 13	1	138 57		
onal.	5	140 00			11	269 50



*Statement showing the principal transactions of the division, &c.—Continued.*

	Number.	Value.	Increase.		Decrease.	
			Number.	Value.	Number.	Value.
Certificates of deposits received, registered, compared, and checked.....	372, 508	\$64, 266, 077 08	45, 609	\$5, 421, 055 08	.....	.....
Transfers received, registered, compared, and checked....	7, 852	1, 318, 050 64	544	307, 548 43	.....	.....
Drafts received, registered, compared, and checked....	17, 902	8, 295, 031 00	1, 073	948, 898 52	.....	.....
Remittances received, registered, compared, and checked	1, 472	325, 557 89	.....	.....	47	\$301- 11
International lists of orders of United States issue received, examined, registered, and checked:						
Canadian .....	344	315, 560 31	.....	58, 670 00	88	.....
British .....	210	892, 681 00	18	87, 606 00	.....	.....
German .....	205	828, 361 37	3	47, 300 00	.....	.....
Swiss .....	108	95, 354 56	2	2, 748 07	.....	.....
Italian .....	107	103, 789 51	.....	.....	.....	1, 523 77
International lists of orders of foreign issue received, examined, registered, and checked:						
Canadian (Canadian issue) ..	344	341, 695 18	.....	1, 243 87	88	.....
British (Canadian issue) ..	216	345, 160 64	.....	.....	.....	14, 682 72
German (Canadian issue) ..	262	648, 230 35	2	.....	.....	28, 088 50
Swiss (Canadian issue) ..	39	56, 382 45	.....	1, 204 15	.....	.....
Italian (Canadian issue) ..	104	10, 302 25	.....	1, 650 40	.....	.....
International accounts of money-order transactions received, examined, registered, adjusted, and settled:						
Canadian .....	4	631, 808 85	1	187, 640 32	.....	.....
British .....	4	1, 395, 229 96	1	511, 601 09	.....	.....
German .....	4	1, 465, 765 50	1	361, 225 34	.....	.....
Swiss .....	2	142, 061 57	1	72, 084 41	.....	.....
Italian .....	4	110, 039 96	1	24, 049 09	.....	.....
Money-orders withdrawn from the files for examination and investigation and returned..	1, 200	.....	174	.....	.....	.....
Advices of money-orders sent for, examined, compared, and returned.....	15, 567	.....	2, 130	.....	.....	.....
Money-orders returned for correction.....	32, 000	.....	9, 500	.....	.....	.....
Money-order accounts prepared, entered, and submitted for suit.....	7	5, 079 29	.....	.....	6	10, 407 31
Letters written and transmitted .....	6, 500	.....	229	.....	.....	.....
Commission and error circulars transmitted.....	80, 096	.....	13, 552	.....	.....	.....

#### NECESSITY FOR AN INCREASE OF CLERICAL FORCE.

The very large and unprecedented increase in the number of post-offices and post-routes during the past three years, the additional work thrown upon this office by reason of the various changes in the postal laws in relation to the manner of adjusting the compensation of post-masters and of paying subcontractors, and the rapid growth of the money-order business, make an increase of the clerical force of this office a necessity.

In my estimates for the service of this office for the fiscal year ending June 30, 1881, submitted to you recently, I have asked for an appropriation for twenty additional clerks; and, in support of that estimate, I beg

Director's accounts settled during fiscal year ended June 30, 1875	144,751
Director's accounts settled during fiscal year ended June 30, 1876	160,441
.....	15,690
.....	10,8
Director's accounts settled during fiscal year ended June 30, 1877	35,601
Director's accounts settled during fiscal year ended June 30, 1878	46,299
.....	10,698
.....	30
Order offices in operation June 30, 1876	3,698
Order offices in operation June 30, 1879	4,844
.....	1,146
.....	31
Orders issued during fiscal year ended June 30, 1875	5,108,009
Orders issued during fiscal year ended June 30, 1876	6,509,331
.....	1,401,322
.....	27
in money-order settlements during fiscal year ended June 30, 1875	\$153,668,544
in money-order settlements during fiscal year ended June 30, 1876	166,760,029
.....	13,091,485
.....	8.5

and, I am pleased to be able to report the work of this office in good condition. With rare exceptions, the clerks and employees are prompt and faithful in the discharge of their official duties. Due to the intelligent and efficient co-operation of the deputy chiefs of divisions I am indebted for the very satisfactory conduct of the business of this bureau.

**J. M. McGREW, Auditor.**

**SHERMAN,**  
*Secretary of the Treasury.*

## REPORT OF THE TREASURER OF THE UNITED STATES.

TREASURY OF THE UNITED STATES,  
Washington, November 1, 1879.

SIR: I have the honor to submit the following statements pertaining to the business of this office and the state of the Treasury for the fiscal year ended June 30, 1879—a year characterized by great transactions connected with the refunding of the war loans into four per cents, and the resumption of specie payments after a suspension of seventeen years; a year of business which has taxed the industry of the office in all the varied duties devolved upon the Treasurer as charged with the custody of all public moneys received into the Treasury and the disbursement thereof upon the warrants of the Secretary of the Treasury and upon the warrants of the Postmaster-General; as fiscal agent for the payment of interest upon the public debt; as the financial agent of the Government for the issue and redemption of the United States note circulation; as agent, also, for the redemption of the circulating notes of all national banks; as trustee and custodian of bonds held by the Treasury for the security of the circulating notes of national banks and of bonds held as security for public deposits therein; as assessor and collector of all Federal taxes on circulation, capital, and deposits of national banks; as custodian of Indian trust funds and bonds of the Pacific Railway sinking funds; as agent for paying the salaries of the members of the House of Representatives, and as commissioner of the sinking fund of the District of Columbia.

## THE STATE OF THE TREASURY.

The following statement is given to show the resources of the Treasury and its demand liabilities on the 30th day of September, 1876, 1877, 1878, and 1879:

*Statement of Liabilities and Assets of the Treasury of the United States on September 30, 1876, 1877, 1878, and 1879.*

	September 30, 1876.	September 30, 1877.	September 30, 1878.	September 30, 1879.
<b>LIABILITIES.</b>				
<b>Fund for redemption of Certificates of Deposit, (Act of June 8, 1872) . . .</b>	<b>\$34, 515, 000 00</b>	<b>\$41, 675, 000 00</b>	<b>\$40, 890, 000 00</b>	<b>\$31, 335, 000 00</b>
<b>Post-Office Department Account . . .</b>	<b>1, 679, 877 01</b>	<b>1, 672, 707 96</b>	<b>2, 151, 693 76</b>	<b>2, 167, 991 50</b>
<b>Disbursing Officers' Balances . . .</b>	<b>16, 632, 207 98</b>	<b>13, 733, 913 59</b>	<b>17, 049, 610 89</b>	<b>26, 007, 876 95</b>
<b>Fund for redemption of Notes of National Banks "failed," "in liquidation," and "reducing circulation" . .</b>	<b>20, 882, 564 50</b>	<b>13, 602, 238 00</b>	<b>9, 182, 400 00</b>	<b>12, 929, 883 75</b>
<b>Undistributed Assets of failed National Banks . . .</b>	<b>641, 424 89</b>	<b>856, 379 42</b>	<b>775, 874 12</b>	<b>642, 314 33</b>
<b>Five per cent. Fund for redemption of National-Bank Notes . . .</b>	<b>11, 100, 779 70</b>	<b>14, 199, 294 60</b>	<b>12, 974, 232 75</b>	<b>15, 082, 482 99</b>
<b>Fund for redemption of National-Bank Gold-Notes . . .</b>	<b>671, 990 00</b>	<b>1, 720 00</b>	<b>1, 720 00</b>	<b>219, 940 00</b>
<b>Currency and Minor-Coin Redemption-Account . . .</b>	<b>38, 746 49</b>	<b>23, 104 41</b>	<b>5, 987 37</b>	<b>4, 213 15</b>
<b>Fractional Silver-Coin Redemption-Account . . .</b>				<b>152, 664 10</b>
<b>Interest Account . . .</b>	<b>605, 757 00</b>	<b>595, 662 25</b>	<b>670, 593 00</b>	<b>101, 514 75</b>
<b>Interest Account, Pacific Railroads, and Louisville and Portland Canal Company . . .</b>		<b>32, 280 00</b>	<b>15, 650 40</b>	<b>6, 270 00</b>

*Statement of Liabilities and Assets of the Treasury of the United States, &c.—Continued.*

	September 30, 1876.	September 30, 1877.	September 30, 1878.	September 30, 1879.
<b>LIABILITIES—Continued.</b>				
Treasurer United States, Agent for paying interest on District of Columbia Bonds	\$29,320 14	\$27,558 80	\$40,811 27	\$298,435 54
Treasurer's Transfer-Checks outstanding	2,243,011 05	2,523,702 79	2,492,885 05	3,652,101 20
<i>Treasurer's General Account.</i>				
Interest due and unpaid	5,405,460 09	8,447,864 77	9,345,289 13	11,561,093 77
Called Bonds and Interest	1,838,531 85	19,064,191 25	12,015,016 78	31,033,519 05
Gold Certificates	20,777,900 00	57,997,500 00	32,826,600 00	14,910,900 00
Silver Certificates			2,028,070 00	4,571,850 00
Refunding Certificates				3,688,900 00
Special Fund for redemption of Fractional Currency		8,265,412 00	10,000,000 00	
Balance, including Bullion Fund	42,461,900 19	80,962,581 41	184,959,189 32	145,128,037 30
<b>Total</b>	<b>168,024,472 39</b>	<b>243,681,111 25</b>	<b>337,424,964 74</b>	<b>303,485,995 07</b>
<b>ASSETS.</b>				
Gold Coin and Bullion	55,423,050 50	107,039,528 85	136,036,302 20	169,827,571 29
Standard Silver Dollars			12,155,205 00	31,805,774 00
Fractional Silver Coin			6,143,963 02	10,873,898 47
Silver Bullion	6,029,368 85	7,425,453 94	9,624,034 48	4,290,124 25
Gold Certificates	4,802,180 00	18,934,000 00	9,392,920 00	70,700 00
Silver Certificates			1,316,470 00	3,131,130 00
United States Notes	73,209,611 08	74,558,308 23	63,049,339 67	48,762,728 01
United States Notes, Special Fund for redemption of Fractional Currency		8,265,412 00	10,000,000 00	
National Bank Notes	14,513,088 51	14,109,541 51	9,259,043 81	4,279,958 76
National Bank Gold Notes	662,000 00	1,720 00	1,720 00	183,640 00
Fractional Currency	1,217,270 03	237,203 64	161,081 86	90,978 15
Deposits held by National Bank Depositories	10,696,085 03	10,731,025 90	75,661,403 15	17,836,816 48
Nickel and Minor Coin	156,873 51	870,140 54	1,410,898 50	1,524,700 57
New York and San Francisco Exchange	23,000 00	353,500 00	367,000 00	1,799,334 51
One and Two Year Notes, &c	319 50	593 70	8,916 51	400 40
Redeemed Certificates of Deposit, (Act of June 8, 1872)			1,345,003 00	2,025,000 00
Quarterly Interest-Checks and Coin				
Coupons paid	126,812 34	90,012 01	256,900 46	189,579 78
Registered and unclaimed Interest paid	398,216 06	333,907 50	370,482 80	22,355 00
United States Bonds and Interest	15,008 85			507 04
Interest on District of Columbia Bonds	11,991 53	6,562 48	1,345 64	516 07
Refunding Certificates and Interest				24,119 74
Pacific Railroads, Sinking Fund				45,312 75
Speaker's Certificates	416 00	6,255 00	123,892 00	
Deficits, unavailing Funds	738,272 60	737,945 95	729,195 64	690,848 30
<b>Total</b>	<b>168,024,472 39</b>	<b>243,681,111 25</b>	<b>337,424,964 74</b>	<b>303,485,995 07</b>

Upon comparison of the condition of the public funds upon the dates mentioned two facts appear: the immense increase in coin and bullion and the decrease in the note assets. The aggregate of gold coin and bullion and of silver coin and bullion—including standard silver dollars, which, being coined under the act of February 28, 1878, do not appear in the statement prior to that year—increased from \$61,452,426.15 in 1876 to \$114,464,982.79 in 1877, to \$163,969,444.70 in 1878, and to \$222,807,368.01 in 1879.

The decrease in the aggregate note assets, including credits in depository banks on other than loan account, has been gradual, the apparent increase in 1877 being due to the failure of the Army bill to become a law, and the accumulation of funds consequent upon withholding pay-

ment to that branch of the service. The note assets ranged as follows on the above dates: In 1876, \$98,419,685.22; in 1877, \$107,664,287.64; in 1878, \$88,772,800.14; and in 1879, \$59,699,080.40.

The decrease in the note balance arises from various causes, notably from the receipt for customs and internal revenue of coin paid out in the purchase of bullion for the coinage of standard silver dollars; from the exchange of notes for gold, and the payment of notes for foreign gold received at the assay office, New York; from the purchase of gold bullion with notes, and the payment of interest upon the public debt in United States notes, and from the payment of arrears of pensions.

The most constant influence in the decrease of the note balance is that which proceeds from the purchase of silver bullion for coinage, thereby depriving the Treasury of an equal amount of note receipts. All the above-mentioned causes of the diminution, except this, can be controlled by the Department. The purchase of silver bullion for gold coin would involve the same loss of note revenues, and this loss will continue as long as the purchases of bullion under the silver-dollar act shall continue. The first bullion for this coinage was bought with gold coin, and subsequent purchases were made with standard silver dollars coined from bullion previously purchased. The coin thus disbursed speedily returned in payment of dues, and, before resumption, every silver dollar or silver certificate paid out for bullion, by its return through the custom-houses, deprived the Treasury of gold coin which would otherwise have been received for duties. Since resumption, however, the Treasury is deprived, by the receipt of coin paid for bullion, of a like amount of United States notes, amounting probably to seven per cent. of the annual revenues. This percentage is greater than the margin between the public receipts and expenditures, and will in time, without the other influences mentioned, render the balance in the Treasury first exclusively metallic, and then exclusively silver.

That this is so, a glance at the monetary operations of the Government will show. The annual receipts from all sources are \$274,000,000. Of this amount at least \$24,000,000 is in silver dollars or in silver certificates, that being the minimum paid annually for silver bullion for coinage, which amount speedily finds its way into the Treasury—the more certainly because payments for bullion are made either at New York or San Francisco, which are both centers of large receipts by the Government. The maximum net note receipts are then \$250,000,000, against which are payments of \$267,000,000 for general expenditures, interest on the public debt, War and Navy Establishment, and pensions, made in notes, or if made in coin, its return decreases the note receipts to that extent. The excess of note expenditures over note receipts is therefore \$17,000,000, which is the annual decrease of the note balance from the silver-dollar coinage alone.

Of the \$59,699,080.40 note balance of the Treasury September 30, 1879, but \$53,042,686.77 is available, the remainder being simply a credit with depositary banks. Of the latter sum \$29,240,000, represented by Clearing House certificates outstanding, is, by sections 5193 and 5194, Revised Statutes, held as a special deposit, and cannot be used to create any expansion or contraction of the currency, but only for the redemption of such certificates, leaving \$23,802,686.77 and the current receipts to be applied to the payment of other demands, including the funds for the redemption of national-bank notes; the five per cent. redemption fund being \$15,082,482, and the fund for the redemption of the notes of failed, liquidating, and reducing banks being

\$12,939,889. Demands upon both are now met with United States notes, for the reason that all national-bank notes presented for redemption are paid for from the five per cent. fund upon their receipt, and after assortment that fund is reimbursed from the other to the amount found due.

The arrangement by which the Treasury became in January a member of the New York Clearing House has been of incalculable advantage in establishing resumption and in saving useless handling of money, and may be made to check the depletion of the Treasury of notes by permitting the settlement of balances in coin to the extent that any exigency may demand. But at present the Treasury membership inures to the benefit of the clearing-house banks, and unless a change in the rules is made permitting payment of all or a certain percentage of balances in silver, it may become desirable for the Treasury to withdraw from a relation which renders over thirty millions of lawful money in its vaults unavailable for payment at New York, the point of greatest public disbursement. All checks in payment of called bonds and in payment for foreign gold are now paid in gold. The decrease of notes in the Treasury continues, however, and will keep on until the limitation or cessation of the present silver-dollar coinage.

It is not the function of this office to do more than to set forth the facts. Everything has been done to put silver and gold into circulation. To this end all payments are made at the various offices in silver, gold, and notes—ten per cent. each in silver and gold and the remainder in notes, unless the payee desires more coin. A further saving might be made by suspending the purchase with notes of gold bullion at the various assay offices.

The silver bullion on hand has also decreased during the year from \$9,634,034.48 to \$4,299,154.25 on account of the difficulty in making purchases, as prescribed in the act of February 28, 1878, at the market rate, which is held by the Department to be the equivalent of the London rate.

The ten million fund in United States notes, held for the redemption of fractional currency, has disappeared from the assets under the provisions of the law which devoted it to the payment of arrears of pensions to soldiers in the war of the Rebellion.

#### UNAVAILABLE FUNDS.

The total amount of unavailable moneys carried in the balances of the accounts of this office on the dates mentioned was as follows:

June 30, 1878.....	\$29,622,241 27
June 30, 1879.....	29,552,254 91
The difference.....	69,956 36

arises as follows: \$47,097.65, which was stolen from the Treasury June 2, 1875, was transferred to the books of the Register of the Treasury, by authority of the First Comptroller, and to the proper personal debit, thus removing it from the cash account of the office. The remainder, \$22,858.71, was deposited March 19, 1879, by the Venango National Bank, Franklin, Pennsylvania, which failed in 1866, leaving the balance due from that bank at this time \$193,932.67.

No public money in the Treasury has become unavailable since March 4, 1877; on the contrary, by collections made since that time the unavailable funds have been reduced more than \$25,000.

It is contemplated at the proper time to submit for reference to Congress a bill to make permanent provision for the transfer of all unavailable items from the cash accounts of this office to the books of the Department, with a debit to the person, State, or bank properly chargeable therewith.

The act of March 3, 1837 (5 Statutes, 178), "to authorize the proper officers of the Treasury Department to credit the account of the Treasurer of the United States with the amount of unavailable funds standing to his debit on the books of the Treasury, to transfer the amount to the debit of banks and individuals indebted for the same, and to authorize the Secretary of the Treasury to compromise and settle said claims," thus disposed of such items as existed at that date, and was considered operative for some time thereafter, but a few years ago was decided by the Comptroller to be inoperative, and no action has been had thereunder recently.

#### RESUMPTION OF SPECIE PAYMENTS.

On December 31, 1860, the amount in the Treasury subject to draft was \$2,233,220.87 in gold and silver. Soon after that date the extraordinary expenses of the war of the rebellion commenced, which were at first met by the ordinary revenues of the Government, received in coin, supplemented by the issue of two-year Treasury notes, seven-thirties of 1861, the proceeds of the sixes of 1880 and 1881, and later by the issue of demand-notes. These loans were all on a coin basis, and amounted to \$578,000,000, the disbursement of which, with the current revenues, did not keep pace with the increasing indebtedness of the Government, and made no impression upon the accumulation of unsatisfied requisitions upon the Treasury until the issue of certificates of indebtedness in April, 1862, and of legal-tender notes under the act of February 25, 1862, the first obligations of the Government not issued on a coin basis. There is no date that can be named as the time when the Government definitely suspended specie payments. The first recorded quotation of gold at a premium is at 103, on January 13, 1862, though at that date it had been at a nominal premium for some time. No specific coin and currency accounts were opened by the Treasury until October 1, 1863.

Gold sales by the Government began July 1, 1866, and continued from time to time until December 31, 1878. The amount sold during that period was \$526,506,273.81, and the amount of premium derived therefrom was \$106,827,815.86, or an average rate of 20  $\frac{1}{2}$  per cent. The highest quotation of gold was 285, July 11, 1864, and the lowest, one sixty-fourth, December 30, 1878, disappearing at the resumption of specie payments, January 1, 1879, the date fixed by the third section of the act of January 14, 1875, for the redemption of United States notes in coin. This consummation necessitated the removal of all distinction between coin and currency in keeping and rendering the public accounts, and the requisite changes to that end were made in compliance with the following order of the Secretary of the Treasury, issued to the Treasurer on the 18th day of December, 1878:

The Department, in its circular of the 14th instant, having directed that, after the first of January next, no distinction be made between coin and notes in keeping, rendering, or settling the accounts of public officers, involving transactions which occur subsequently to that date, you will keep but one money of account of transactions which occur after January 1, 1879; and you will issue at once the necessary instructions to the several Sub-Treasury officers to enable them to render transcripts of your general accounts accordingly.

The necessary instructions were at once given to the various Assistant Treasurers of the United States, and with the close of business on the last day of 1878 all accounts of public moneys were closed and the balances carried to one new account. On the 2d of January, 1879, the redemption of United States notes in coin began at the Sub-Treasury in New York with so little disturbance, that more gold was received on that day and several days thereafter than was paid out, the total decrease of gold in the Treasury during that month being \$1,625,532.77. The amount of gold coin and bullion in the Treasury January 1 was \$135,382,630.42. At this date it is \$171,517,713.65, an increase of \$36,135,074.23 since resumption; while the redemptions of United States notes in gold have been \$11,256,678, as follows: January, 1879, \$1,571,725; February, \$909,249; March, \$952,766; April, \$699,773; May, \$1,339,883; June, \$2,503,302; July, \$954,800; August, \$981,400; September, \$603,485; October, \$740,295.

Since the order of the Secretary of the Treasury authorizing the receipt of United States notes for customs, which took effect January 1, 1879, there had been received to September 30, 1879, on that account, in legal-tender notes, at this office and the various sub-treasuries, \$92,137,927.

As will appear from the following table, the reserve in the Treasury for resumption purposes, being the excess of cash assets over demand liabilities, on December 31, 1878, was \$126,464,332.34, and on October 31, 1879, \$151,047,044.24:

*Statement of the Coin Assets and Coin Liabilities of the Government at the close of business December 31, 1878.*

COIN ASSETS.

Gold Coin in Treasury and Mints.....	\$128,575,950 73
Gold Bullion .....	6,806,688 69
Silver Bullion .....	9,439,461 25
Silver Profit Fund .....	300,000 00
Standard Silver Dollars .....	16,697,338 00
Coin Deposits with National Banks—proceeds of Bonds sold.....	52,584,179 48
Fractional Silver Coin.....	6,039,295 52

Total Coin Assets ..... \$220,442,913 67

COIN LIABILITIES.

Called Bonds not matured .....	\$35,996,100 00
Called Bonds matured .....	\$22,140,642 55
Less amount on hand.....	10,371,165 64
Interest due.....	25,818,986 39
Less amount on hand.....	5,522,602 67
Gold Certificates .....	21,580,700 00
Less amount on hand.....	391,420 00
Silver Certificates .....	2,496,130 00
Less amount on hand.....	2,082,770 00
Disbursing Officers' Balances .....	413,360 00
Outstanding Drafts and Checks .....	751,062 63
Sales of 4 per cents in excess of Bonds called.....	383,418 07
	3,179,500 00

93,978,581 33

Balance available for Resumption ..... 126,464,332 34



*Statement of the Assets and Liabilities of the Government, October 31, 1879.*

ASSETS.	
Gold Coin in Treasury and Mints...	\$121,355,448 90
Gold Bullion .....	50,358,464 75
Silver Bullion .....	3,537,224 31
Standard Silver Dollars.....	32,322,634 00
Fractional Silver Coin.....	17,755 986 76
	<hr/>
	\$225,329,758 72
United States Notes .....	49,537,815 74
	<hr/>
Total.....	\$274,867,574 46
DEMAND LIABILITIES.	
Called Bonds matured .....	\$24,271,506 95
Less amount on hand.....	762 93
	<hr/>
	\$24,270,744 02
Interest due.....	9,704,299 49
Less amount on hand.....	277,706 29
	<hr/>
	9,426,593 20
Gold Certificates .....	14,591,000 00
Less amount on hand.....	213,400 00
	<hr/>
	14,377,600 00
Silver Certificates .....	6,135,850 00
Less amount on hand.....	4,531,480 00
	<hr/>
	1,604,370 00
Certificates of Deposit, (Act of June 8, 1872).....	22,510,000 00
Less amount on hand.....	2,315,000 00
	<hr/>
	20,195,000 00
Disbursing Officers' Balances .....	18,337,397 01
Outstanding Drafts and Checks .....	5,020,764 96
Five per cent. Redemption Fund .....	15,742,887 52
Fund for redemption of Notes of National Banks— failed, liquidating, and reducing circulation.....	13,052,124 25
Post-Office Department Account .....	1,793,049 26
	<hr/>
	123,820,530 22
Available for Resumption .....	151,047,044 24

## REFUNDING THE DEBT.

The keeping of the public accounts with National Banks designated as depositaries of the United States to receive subscriptions to the four per cent. loan, consols of 1907, devolved upon this office. As a basis for these accounts every bank was required to render weekly transcripts of the Treasurer's account with it, in which all subscriptions were carried to his credit and all payments into the Treasury to his debit. Based upon these subscriptions, the Secretary of the Treasury issued his circulars calling in the five-twenty and ten-forty loans for redemption, interest ceasing thereon at the expiration of ninety days from the date of the notice. When received at the Department, the bonds are checked from the numerical registers of bonds issued, and transmitted to the Treasurer for computation of interest and disposition of the proceeds, either by credit in loan account or payment by check to the holders thereof.

The following is a statement by months of the bonds which matured under calls of the Department from the beginning of the fiscal year to the close of the recent refunding operations:

July, 1878 .....	\$5,000,000
August, 1878.....	10,000,000
September, 1878.....	10,000,000
October, 1878.....	20,000,000
November, 1878.....	25,000,000
December, 1878.....	10,000,000
January, 1879.....	None.
February, 1879.....	10,000,000
March, 1879.....	16,000,000

April, 1879	\$150,000,000
May, 1879	100,000,000
June, 1879	30,000,000
July, 1879	258,000,000

The duty of transferring to the Treasury the proceeds of sales of bonds on deposit with the banks under the regulations of the Department was not assigned to the Treasurer until September 26, 1878, when the following order was made by the Secretary of the Treasury:

In furtherance of our conversation to-day, I have to request that where deposits with National Banks on account of subscriptions to the four per cent. loan have not been paid into the Treasury within ninety days after the deposit was made, you will at once draw for the amount of such deposits, to be forthwith paid into the Treasury, and as such deposits accrue under this rule, you will make such withdrawals until the whole is paid.

Under that letter, all funds which had been held by banks on loan account more than ninety days were at once required to be paid into the Treasury in coin, and, as subscriptions matured, drafts therefor were made upon the subscribing banks from that date up to March 26, 1879, at which time \$17,000,000, being proceeds of four per cent. bonds sold, had accumulated in the Treasury, awaiting the presentation and redemption of a like amount of called bonds upon which interest had ceased. It becoming apparent that should the withdrawal of money continue the market would be affected unfavorably and the refunding operations checked, the following order was issued to this office by the Secretary, under date of March 26, 1879:

As it is desirable to make payment of called bonds in the mode that will least disturb the market, you will draw from the depositary banks the proceeds of four per cent. bonds only when required to make payment of called bonds, and in proportion from the several depositaries to the amounts held by them, as near as may be, in sums of \$1,000.

Money in the Treasury received for four per cent. bonds should be applied to the payment of called bonds before such drafts are made.

When practicable, drafts upon depositary banks for transfers of deposits on account of proceeds of four per cent. bonds may be so drawn as to be payable at the option of the bank, through the New York Clearing-House.

Drafts on depositary banks in cities other than New York should be drawn a sufficient time in advance to meet payments there.

Payment by called bonds should be treated as payment in money, as of the date when it would, under this order, be required.

Under that order bonds included in calls falling due within the month of April were redeemed in advance of the maturity of the calls, and while the order was in force the proceeds of any called bonds presented by depositary banks were credited in account to any subscription made prior to the date of the call in which such bonds were included.

The sale of refunding certificates, commencing on the first of April, created an additional tendency to the accumulation in the Treasury of funds accruing from the loan operations; yet, by making no drafts upon the banks on subscription account during that month, the accumulation of proceeds of bonds and certificates sold decreased in that month and the first week in May, until, on the 8th of the latter month, it was entirely exhausted, and \$1,764,851.40 had been paid out from the general cash of the Treasury in redemption of bonds. From that date to the 20th of June this fund recovered and increased to \$20,555,548.32, but rapidly decreased under the immense redemptions of July, until, on the 25th of that month, the fund which, on the 1st of April, was \$15,000,000, had been entirely exhausted, and \$16,141,341.55 had been paid out of the general cash for called bonds. From that time, however, under the effect of regular drafts on the banks from this office, the fund recovered itself, and on the 13th of August, the date of the order of the Department extending the time of settlement of loan accounts in depositary banks, it

stood at \$15,772,458.93, being less than the amount in the Treasury when the order of March 26 was issued.

The following statement is given to show the average amount of funds in the Treasury arising from four per cent. bonds and refunding certificates sold during the five months from April to August, during which months the heaviest settlements of loan accounts were made, and that that average was not at any time permitted to exceed the amount of those funds on hand at the date of the Secretary's order above mentioned, and that the immense settlements were made with such care that the Treasury did not withdraw money from the market.

The average amount of the funds mentioned was as follows :

April .....	\$9,901,812 48
May .....	9,289,536 84
June .....	14,066,759 46
July .....	3,362,254 00
August .....	11,545,465 68

During the month of September, after the refunding was over, the amount of deposits in the Treasury on bond account increased to an average daily balance of \$19,112,743.47, caused by the falling off in receipts of called bonds for redemption, and by the drafts made necessary in closing the depository accounts.

In compliance with the order of March 26, no drafts on loan account were drawn on the banks until April 16, and from that time until its modification in August, the drafts were regulated by the demand for money in redemption of bonds, except that after the maturity of the last call, July 23, drafts were made with a view to the speedy settlement of the accounts. With the account for the proceeds of four per cents. sent to London for sale under some arrangement made by one of the depository banks, this office had nothing to do, it being understood that settlement therefor should be made by called bonds or coupons delivered in London or New York, or by money deposited in New York, on or before the 1st of October.

The following is the form of draft made upon the depository banks in New York City, under the letter of March 26, for the deposit in the Treasury of proceeds of bonds sold :

Upon receipt hereof deposit to my credit with an Assistant Treasurer United States, or by your acceptance indorsed hereon, made payable at the clearing-house in favor of and delivered to the Assistant Treasurer United States, at New York, \$—— in coin, as a "transfer of deposits on account of subscriptions to the four per cent. loan of 1907." This draft must be paid in money and not in called bonds.

Drafts, except on final settlement, were made in loan account upon all debtor banks alike, for a small percentage of the balance due after deducting all bonds in possession of the Department for credit in account, and were made only to cover the amount necessary to make the cash account good for disbursements already made in redemption of called bonds. Hence, called bonds were not received in payment of drafts, but were immediately, upon receipt, before redemption, considered as a credit to the bank owning them, in striking its balance.

The final settlement of the loan accounts was made under the following order of the Secretary, transmitted to this office August 13, 1879 :

With a view to closing as soon as practicable the accounts of the Department with depository banks on loan account without unnecessary disturbance of the money market or the withdrawal of legal-tenders from current business, you will please receive from such depositories in payment called bonds to be credited when passed through the Loan Division. You will require from such depositories sufficient money in addition to the called bonds credited to meet all demands for the payment of called bonds, and so as to insure the withdrawal of all deposits on loan account on or before the 1st of October next. The letter of the Department of March 26 is modified accordingly.

The following statement shows the aggregate amount of drafts drawn each day on loan account upon depositary banks under the above order and that of March 26:

April 16 .....	\$3,976,707 77	August 27 .....	\$542,000 00
April 23 .....	4,999,209 52	August 28 .....	685,000 00
May 1 .....	4,806,112 60	August 29 .....	548,000 00
May 5 .....	4,935,971 32	August 30 .....	500,000 00
May 7 .....	4,506,495 96	September 1 .....	500,000 00
May 9 .....	5,020,732 07	September 2 .....	505,000 00
May 12 .....	10,001,000 00	September 3 .....	500,000 00
May 13 .....	10,145,000 00	September 4 .....	649,000 00
June 25 .....	10,017,036 95	September 5 .....	500,000 00
July 2 .....	10,002,118 60	September 6 .....	500,000 00
July 9 .....	10,004,535 56	September 7 .....	500,000 00
July 18 .....	10,002,528 15	September 9 .....	552,000 00
July 23 .....	10,003,820 26	September 10 .....	530,000 00
July 24 .....	15,204,427 21	September 11 .....	530,000 00
July 26 .....	3,000,000 00	September 12 .....	530,000 00
July 28 .....	10,009,783 10	September 13 .....	517,000 00
July 30 .....	10,127,873 93	September 15 .....	515,000 00
August 1 .....	10,391,628 07	September 16 .....	515,000 00
August 4 .....	5,190,828 18	September 17 .....	490,000 00
August 6 .....	8,722,607 07	September 18 .....	486,000 00
August 8 .....	4,945,170 05	September 19 .....	486,000 00
August 11 .....	3,750,000 00	September 20 .....	466,000 00
August 19 .....	752,000 00	September 22 .....	466,000 00
August 20 .....	807,000 00	September 23 .....	466,000 00
August 21 .....	500,000 00	September 24 .....	419,000 00
August 22 .....	500,000 00	September 25 .....	422,000 00
August 23 .....	500,000 00	September 26 .....	357,774 05
August 25 .....	500,000 00		
August 26 .....	680,000 00	Total .....	187,815,450 42

The above amounts are exclusive of proceeds of called bonds redeemed and credited in account. No drafts were drawn from May 13 to June 25, because the sales of refunding certificates during that period were ample, with the ordinary receipts from four per cents., to cover redemptions of called bonds. The following statement shows that the total amount of called bonds presented for redemption from January 1 to November 1, 1879, was \$568,333,700, and that of the proceeds \$264,152,046.49 was paid by the Treasurer's checks, and \$315,513,622.30 credited to the banks in loan account. Of the total amount paid by check at least \$255,000,000 was paid in United States notes, and the whole sum would have been so paid but for the fact that the necessities of the Treasury have required payment to be made in coin at the New York office, though coin has not been demanded therefor in any case.

Month.	Principal.	Proceeds.	Paid by Treasurer's checks.	By credits in loan account to depositary banks.
January .....	\$16,843,150 00	\$17,087,586 42	\$1,236,354 60	\$12,251,227 83
February .....	16,903,150 00	17,243,850 52	6,534,395 14	10,709,525 38
March .....	49,378,290 00	50,239,574 07	7,851,626 51	41,387,957 56
April .....	84,436,700 00	85,918,141 77	26,461,823 66	59,456,321 11
May .....	115,258,800 00	115,748,871 99	18,171,585 96	97,577,286 00
June .....	107,806,900 00	110,248,175 85	30,919,591 79	76,828,584 06
July .....	123,001,650 00	126,465,098 78	92,742,811 40	33,732,827 38
August .....	37,395,400 00	38,300,976 44	25,063,994 88	13,236,981 56
September .....	11,463,700 00	11,670,045 51	6,396,636 78	5,312,408 73
October .....	6,593,650 00	6,703,794 47	5,173,290 77	1,530,504 70
	568,333,700 00	579,065,963 79	264,152,046 49	315,513,622 30

#### REFUNDING CERTIFICATES.

The act of February 26, 1879, authorized the issue, in exchange for lawful money, of *certificates of the denomination of ten dollars, bearing*

four per cent. annual interest, convertible at any time into four per cent. bonds. They were of two descriptions, those payable to bearer, issued by the Treasurer, amounting to \$39,954,250; and registered certificates with the name of the holder inscribed therein, issued by the Register, amounting to \$58,500; making in all, \$40,012,750, for which there was deposited in the Treasury, including accrued interest, \$40,209,139.71.

There were designated for the purpose of disposing of the certificates one hundred and eighty-four national banks, of which but seventy-six qualified by depositing collateral security with the Treasurer. Through these \$1,197,670 were sold. Seven hundred and ninety-nine government officers were designated as depositaries under section 3639, Revised Statutes, but only five hundred and nine qualified by filing bonds. Through these \$28,569,200 were sold, and by this office and the nine sub-treasuries \$10,245,880 were sold. The largest sale was by the depositary at New York City, amounting to \$3,229,590, and the smallest \$120, by the depositary at Springdale, Pa. The first certificates were sold April 1, 1879, from which date they bore interest, and the sales continued slowly until the 16th of that month, when, by reason of the premium upon four per cent. bonds, into which they are convertible, there began to be an increased demand for the certificates for speculation; whereupon it was ordered by the Department that but ten certificates should be sold to any person at one time. Speculation continued, inducing the hiring of parties to occupy places in the line of buyers at points where sales were being made. The largest daily sale reported was on May 24, amounting to \$3,340,860. The deliveries of certificates from the Printing Bureau ceased with that month, and the last shipment to a depository was made on June 2.

The following table shows the amount of refunding certificates sold in the District of Columbia, and in the several States and Territories:

Alabama .....	\$196,250	Minnesota .....	\$480,000
Arizona .....	1,000	Mississippi .....	35,000
Arkansas .....	12,000	Missouri .....	1,829,900
California .....	116,800	Nebraska .....	76,120
Colorado .....	6,000	New Hampshire .....	251,000
Connecticut .....	1,290,000	New Jersey .....	2,958,000
Dakota .....	5,000	New York .....	7,017,530
Delaware .....	25,000	North Carolina .....	103,000
District of Columbia .....	5,476,600	Ohio .....	2,047,870
Georgia .....	157,290	Pennsylvania .....	5,329,320
Idaho .....	5,000	Rhode Island .....	272,000
Illinois .....	2,722,750	South Carolina .....	18,000
Indiana .....	498,700	Tennessee .....	42,000
Iowa .....	94,500	Texas .....	37,000
Kansas .....	191,010	Vermont .....	610,000
Kentucky .....	602,000	Virginia .....	497,500
Louisiana .....	135,000	West Virginia .....	114,000
Maine .....	402,000	Wisconsin .....	391,530
Maryland .....	2,882,000		
Massachusetts .....	2,973,010	Total .....	40,012,750
Michigan .....	111,070		

The object of this loan was to furnish an investment for the small savings of the people. The rapid sales induced by the unexpected appreciation of the four per cent. bonds exhausted the amount of certificates set apart for popular subscription so quickly, that the original purpose was almost wholly defeated. The conversion of the certificates into bonds commenced on June 19, and up to this date \$37,148,950 of the amount issued has been presented for conversion. The total number of cases of certificates presented for conversion is 6,359, the average amount of each case being about \$5,800. The number of \$50 cases deposited is 370; the number of \$100 cases is 940; the number from \$100 to \$1,000, inclusive, is 2,518; the number over \$1,000 is 2,531, and the largest amount in

any one case was \$820,000. The amount outstanding at this time is \$2,863,800.

## UNITED STATES NOTES.

The following table shows the denominations of United States notes in circulation at the close of the fiscal years 1877, 1878, and 1879. The cents appearing therein arise from the redemption and partial payment, under the rules of the Department, of mutilated notes:

Denomination.	1877.	1878.	1879.
One dollar.....	\$25,160,287 80	\$20,929,874 30	\$18,209,980 80
Two dollars.....	25,369,826 20	20,010,948 20	18,092,653 20
Five dollars.....	49,338,224 00	54,669,556 50	54,107,113 00
Ten dollars.....	64,495,717 00	65,551,644 00	64,688,532 00
Twenty dollars.....	62,607,197 00	62,720,643 00	60,470,837 00
Fifty dollars.....	35,912,910 00	27,182,689 00	25,523,349 00
One hundred dollars.....	29,410,170 00	31,624,679 00	32,058,480 00
Five hundred dollars.....	33,884,500 00	30,878,500 00	32,569,500 00
One thousand dollars.....	34,585,500 00	33,212,500 00	35,070,500 00
Five thousand dollars.....			4,000,000 00
Ten thousand dollars.....			2,900,000 00
Total.....	360,764,332 00	347,681,016 00	347,681,016 00
Destroyed in Sub-Treasury in Chicago fire, denominations unknown.....	1,000,000 00	1,000,000 00	1,000,000 00
	359,764,332 00	346,681,016 00	346,681,016 00

The reduction of \$13,083,316 circulation during the year 1878 was due to the operation of the resumption act, which provided for the redemption of United States notes in excess of three hundred millions to the amount of eighty per cent. of the national-bank notes issued. This retirement of notes ceased under the provisions of the act of Congress of May 31, 1878, and no reduction in the volume of outstanding notes has been made since that time. By virtue of the authority vested in the Secretary of the Treasury by section 3571, Revised Statutes, notes of the denominations of \$5,000 and \$10,000 have been engraved, printed, and issued during the past year to the amount of \$10,000,000, for the purpose of taking the place of gold certificates, the issue of which was discontinued December 1, 1878, as a preliminary step toward resumption.

There has been a decrease in the amount outstanding of all denominations of notes under one hundred dollars and an increase of all larger denominations. This has taken place, not by any action of the Department, but because during a greater part of the year small notes have been sent in for redemption by the public and large notes requested in their place. The demand, however, for notes less than fifty dollars has been so great since the close of the fiscal year that it has been impossible to supply it fully. To an unusual fall demand for the movement of Western crops has been added an unexpected request for small notes to be used on account of the cotton crop, heretofore paid for in coin.

The following statement, giving the increase and decrease of the various denominations of United States notes outstanding, shows that from July 1 to date there has been issued of notes of the denomination of twenty dollars and less \$24,855,595, and an equal amount redeemed and canceled of notes of the denomination of fifty dollars and above:

Denomination.	Increase since July 1, 1879.	Denomination.	Decrease since July 1, 1879.
1s.....	\$1,110,322	50s.....	\$670,295
2s.....	845,711	100s.....	610,300
5s.....	7,503,920	500s.....	10,123,000
10s.....	7,072,750	1,000s.....	12,242,000
20s.....	8,322,886	5,000s.....	750,000
		10,000s.....	400,000



But one new counterfeit United States note has made its appearance during the year. It is of the denomination of five dollars, series of 1875, and is supposed to have been engraved in Canada and first put in circulation in Buffalo, N. Y. The paper is a poor imitation, an attempt being made to give it the appearance of Government paper by printing thereon lines resembling the localized fiber. There have also appeared at various times imitations of a twenty-dollar note drawn with a pen, but of such a character as to deceive no one familiar with money.

The condition of the outstanding United States note circulation is becoming cause for complaint. Prior to 1876 such appropriations were made by Congress that the transportation charges upon all notes sent in for redemption and the returns therefor were paid by the Department. Under that system about twenty-five per cent. of the circulation was redeemed annually, thus virtually renewing it every four years. Under the present system, which obliges holders of notes to return them for redemption at their own expense for transportation, the notes in circulation will apparently be redeemed once in six years, though, in fact, by reason of the expense attending the remittance, they will not be returned, until absolutely unfit for circulation, from points without the territory covered by the present Government express contract. The transportation charges so vary with the distance, that the burden and inconvenience of the present system are very unequally distributed.

Under the present system, also, mutilated notes are subjected to a proportionate deduction by tenths for missing parts, and the tax upon the community on that account, when the circulation is in bad condition, is quite a serious item, amounting to \$9,897 during the past year. The detection of counterfeits is also rendered difficult when the bad condition of genuine notes renders likeness thereto more easily attainable in the spurious; hence counterfeiters usually select the older issues for their purpose.

To the requirement that the holder should pay the transportation charges is due to a great extent the reduction in the circulation of small notes. The banks send in most of the money redeemed, composed largely of small notes, which are subjected to the most use and wear in circulation, and generally take in return large notes, which can be handled with the least expense. The people who wish small amounts of small notes cannot afford to send for them, and hence the volume of such notes in circulation is continually diminishing. This, however, aids the distribution of standard silver dollars, by which the falling off in ones and twos has been nearly counterbalanced.

The following table shows the issue and redemption of United States notes by denominations during the fiscal years 1878 and 1879 and the gradual decrease of small notes in circulation:

Denomination.	1878.		1879.	
	Issued.	Redeemed.	Issued.	Redeemed.
1s.....	\$7,562,351	\$11,792,775	\$6,593,133	\$9,223,026 50
2s.....	6,284,000	10,746,878	5,892,000	8,710,295 00
5s.....	15,820,000	16,111,867	11,060,000	11,622,443 50
10s.....	11,380,000	13,763,063	9,280,000	10,187,062 00
20s.....	9,200,000	9,686,534	7,400,000	9,649,756 00
50s.....	3,200,000	6,237,030	2,400,000	4,059,340 00
100s.....	0,406,000	4,184,100	5,007,700	4,583,880 00
500s.....	4,817,000	4,421,000	5,650,000	3,959,000 00
1,000s.....	2,603,000	3,973,000	3,900,000	2,042,000 00
5,000s.....			4,005,000	5,000 00
10,000s.....			3,010,000	50,000 00
Total.....	67,275,951	80,359,267	64,107,833	64,107,833 00

It has heretofore been held to be the duty of the Government to keep its circulating notes in good condition; in fact, for the first sixteen years

of the present paper money, notes in any condition, perfect or worn, were sent in and new notes returned without expense to the holder for transportation. In this way this office assorted a great deal of money for the banks of the country, many regularly sending their daily receipts to the Treasury to receive within a few hours new notes of any desired denominations in exchange. That arrangement was too liberal and expensive, involving the destruction of too many notes fit for circulation, for all redeemed were destroyed. Notes unfit for circulation only should be received at the expense of the Department, and packages containing others should be subjected to deduction of transportation charges at Government contract rates as at present.

By reason of some decrease in the production of United States notes during the past fiscal year the experiment of assorting notes received for redemption was tried for the first time by this office, and the result has been that out of a total redemption of \$64,107,833 during the year, only \$686,136, or about one per cent. of the face value, and less than eight-tenths of one per cent. of the number of notes redeemed, was obtained in notes fit for reissue. This result bears out the previous judgment of the office that it does not pay to assort notes received for redemption, especially when consignors pay the express charges thereon. It may possibly be more profitable to assort when notes upon the new distinctive paper recently adopted are paid out, as that paper will be of better quality and more durable than the localized-fibre paper now in use.

## STANDARD SILVER DOLLARS.

The total coinage of standard silver dollars under the act of February 23, 1873, is \$45,206,200, of which amount \$32,203,373 is in the mints and treasury offices and \$13,002,842 is in circulation at this date, being twenty-eight and three-fourths per cent. of the total coinage as against \$4,922,623 in circulation at the same date last year, which was twenty-six and nine-tenths per cent. of \$18,282,500 coined to that time. The methods of the Department for the rapid distribution of this coin have been the best that could be devised, and whether the above figures show that the present rate of coinage is about seventy-five per cent. in excess of the ability of the Treasury to distribute the coins must be left to time to determine.

The following table shows the amount coined, on hand, and outstanding at the close of each month since the coinage commenced:

Month.	Monthly coinage.	Coined to the end of the month.	Monthly balance on hand.	Net distribution during the month.	Outstanding.
1873.					
March.....	\$1,001,500	\$1,001,500	\$810,561	\$190,939	\$190,939
April.....	2,470,000	3,471,500	3,169,081	110,419	301,610
May.....	3,615,000	6,486,500	5,950,451	536,049	556,049
June.....	2,087,000	8,573,500	7,718,357	855,143	855,143
July.....	1,847,000	10,420,500	9,550,256	870,244	870,244
August.....	3,028,000	13,448,500	11,282,849	2,165,651	2,165,651
September.....	2,764,000	16,212,500	12,155,205	4,057,295	4,057,295
October.....	2,070,000	18,282,500	13,559,877	4,722,623	4,722,623
November.....	2,150,000	20,432,500	14,843,219	5,589,281	5,589,281
December.....	2,057,000	22,489,500	16,761,829	5,727,671	5,727,671
1872.					
January.....	2,660,200	21,555,750	18,625,229	2,930,521	2,930,521
February.....	2,132,000	23,687,750	20,619,181	3,068,569	3,068,569
March.....	2,687,200	26,374,950	23,799,206	2,575,744	2,575,744
April.....	2,381,000	28,755,950	26,068,647	2,687,303	2,687,303
May.....	2,330,000	31,085,950	28,256,154	2,829,796	2,829,796
June.....	2,315,000	33,400,950	30,354,580	3,046,370	3,046,370
July.....	1,550,000	34,950,950	32,317,201	2,633,749	2,633,749
August.....	2,787,000	37,737,950	34,962,354	2,775,596	2,775,596
September.....	2,396,000	40,133,950	37,363,774	2,770,176	2,770,176
October.....	2,572,100	42,706,050	39,795,873	2,910,177	2,910,177



Their introduction has been as rapid as could be expected of a standard of money which, though theoretically identical with the gold standard, falls more than a tenth short in intrinsic value, as measured in the markets of the world, even under the very favorable circumstances of the withdrawal by the Government from the market of at least thirteen hundred tons of silver bullion. The standard silver dollar has been compelled to make its way against trade dollars and Mexican dollars of greater intrinsic value obtainable at a discount from their face value, and against the glut of fractional silver which, to the extent of some thirty millions of dollars, had already been put in circulation under the act of 1876, in addition to large amounts of the old fractional silver coinage called out from hoards by the resumption of specie payments, as well as against the settled habit of handling paper money acquired by the people of the country through seventeen years of suspension of specie payments. But for the free transportation of this coin, afforded by the Mint from the silver-profit fund, and the very liberal regulations approved by the head of the Department, it would be impossible to place and keep such an amount in circulation.

It is too early yet to gather the judgment of the country upon this coin as a circulating medium. The laboring men and common people take it willingly, because in small amounts and retail transactions it burdens them little. For large payments it is avoided, and vaults built since the suspension of specie payments are generally unsuited to the bulk and weight of silver coin, so that few banks and bankers take it on deposit or for their reserves. It takes the place of one and two dollar notes as they go out of circulation, and absorbs from the market the surplus silver product of the country until the time when, remonetized by the nations, it shall become the money of the world, available for foreign exchange. In that case, in lieu of sixty millions of dollars in gold received in settlement of balances, the country might get that amount in silver coin or bars. If the course of foreign trade has turned permanently in our favor, bi-metallism has a new interest to us as a silver-producing nation, in our condition so suddenly changed, relatively to foreign nations, from debtor to creditor; and the international double standard, when set up, ought to be so adjusted that a thousand dollars in silver or in gold will be equally desirable for payment of that amount across the street or across the world, and the difference between the two metals, in bulk and weight in proportion to value, be so counterbalanced that it shall be absolutely immaterial in every particular to debtor, creditor, consignor, common carrier, and consignee whether silver or gold is paid, sent, carried, or received. If such adjustment can be made, the resulting double standard will be perfect, but any element of preference in either metal not neutralized will disparage the other, and lead to fluctuation either in value or circulation. The recent rapid appreciation of silver, however, bids fair to solve the silver problem for this country, and there are indications that, if the present influences continue, it may attain nearly to its former relation to gold, or at least approach to a parity therewith.

The demand for silver dollars has increased during the past few months in the general desire for small denominations of money. The distribution of this coin in October, 1879, was \$2,175,516, which exceeded that of any other month. The month of May, 1879, was the only month which showed a decrease in the amount outstanding, more having been returned to the Treasury in that month by \$57,107 than was paid out.

#### SILVER CERTIFICATES.

The total amount of silver certificates issued under the act of Feb-

mary, 28, 1878, to September 30, 1879, is \$13,032,000: at Washington, \$1,416,000; at New York, \$346,000; at San Francisco, \$11,270,000. There was in circulation, however, at the latter date, of all issues, but \$1,440,720. They are not a legal tender, but are by law made receivable for all dues to the Government and are taken by the public only in lieu of standard silver dollars. The only exception known to this office is that during the recent scarcity of small notes, \$500,000, and perhaps more, in silver certificates was sent south from New York for use as currency. Many have been issued in San Francisco to applicants for standard silver dollars in exchange for gold coin. The certificates thus obtained, being sent directly to New York by mail, are sold to brokers at a small discount, and the proceeds used as a basis for exchange which is sold in San Francisco. By far the greater amount of certificates is issued in the purchase of silver bullion for coinage purposes, which is paid for in silver dollars.

The total disbursements in purchase of silver bullion for the dollar coinage under the act of 1878 to September 30, 1879, were \$38,594,435.89. Of this amount \$7,672,792.95 was paid in gold and \$30,921,642.94 in standard silver dollars, in lieu of which latter amount the sellers of the bullion took silver certificates; and yet but \$13,032,000 in silver certificates was ever issued, and the actual amount of certificates paid out and put in circulation was never over \$12,000,000. The remainder reported as issued, not yet having been required for circulation, is held in the Treasury.

The New York office has disbursed \$21,698,000 for silver bullion upon the checks of the Mint, payable in standard silver dollars, and yet that office never had over \$9,000,000 in standard silver dollars, very few of which were ever paid out, and none of them for bullion; and though it never had in all more than \$10,000,000 of the total silver certificates issued, yet the above disbursement of over \$21,000,000 was made in silver certificates. In explanation of the manner in which so few certificates suffice for making the monthly purchases of silver bullion, required by law to amount at the minimum to \$2,000,000, it is only necessary to note the particulars of such transactions, as follows: The Department places, say, \$1,000,000 in standard silver dollars at the credit of the Superintendent of the Mint, and, upon the delivery of the fine silver purchased, that officer draws his check in payment against that credit. For the amount of this check the payee asks silver certificates, and immediately sells the certificates to a broker, from whom they at once find their way again to the Treasury, again to be reissued in payment of similar checks drawn by the Mint, so that the payments for bullion being made weekly, a half million dollars in silver certificates will cover purchases of bullion for any length of time at New York. If the convenience of the Mint did not necessitate the removal of the coin for storage, the entire purchases of silver bullion at New York, and all other business requiring standard silver dollars at that point, could be accomplished with, at most, \$1,000,000 in that coin as a basis for the issue of certificates. In fact, in view of the rapidity with which the first-issued San Francisco certificates reached the New York office through the New York custom-house, and in view of the rapidity with which they return to the New York office when reissued by it, there is no doubt that, after the latter office had been put in possession of the first million of San Francisco certificates the whole twenty-one millions of silver bullion bought by it could have been paid for in standard silver dollars, by means of the certificates in question, without a single standard silver dollar ever having been in the vaults of the New York office. For, as

often as certificates returned, after being paid out on Mint checks, they could again be placed to the credit of the Mint and paid out and returned. This shows that silver certificates may be reissued for checks payable in standard silver dollars, and without a deposit of the dollars with the officer paying out the certificates. From this explanation it will appear that the following statement made in the Senate on the 10th of last January in regard to the report of this office on the standard silver dollar was uttered under a misapprehension of the facts:

The act of February 28, 1878, which makes silver dollars a legal tender for all demands, public and private, by the third section thereof authorizes any holder of not less than ten dollars to deposit it with the Treasurer or any Assistant Treasurer of the United States and receive a certificate, upon the presentation of which the holder is entitled to the amount of coin deposited, and custom-house officers are ordered to receive these certificates precisely as they would coin, the amount they represent being already in the Treasury. The customs dues are paid in coin, not in certificates; these merely attest the fact that the coin is in the Treasury, and it becomes the property of the United States, being paid for customs dues precisely as if it was counted dollar by dollar into the hands of the revenue collector, who is charged with that amount of money as soon as the transaction is closed. The merchant who pays, say, \$1,000, to pass his goods through the custom-house, may pay it in one hundred certificates of \$10 each, which he may have obtained from one hundred different people; the coin they represent becomes the absolute property of the United States, and is at once subject to the uses to which coin received for customs dues is by law appropriated, and cannot be otherwise legally used. Yet, in the face of these facts, the Secretary adopts and sends to the Senate as his answer the following nonsense signed by the Treasurer. After stating that \$1,500,000 would be a liberal estimate of the coin actually paid at the custom-houses since July, 1878, he says:

"The above figures do not, however, cover silver certificates received on account of customs, principally at the New York office, which amounted during the current fiscal year to \$11,260,000. This amount exceeds the total of silver certificates issued, which is accounted for by the fact that when received for public dues silver certificates have been again paid out; the greater portion of the above \$11,260,000 is represented by only \$6,717,000, in San Francisco silver certificates received for customs in New York, all, or a portion, being again paid out by that office and again received for customs. Silver certificates cannot be paid for interest, their issue being authorized only upon the deposit of standard silver dollars."

There is as much absurdity in that paragraph as could be well crowded into as many words. He says "*silver certificates cannot be paid for interest.*" Admit it; they are not a legal tender to any private person for anything, but the \$11,260,000 in silver coin which these certificates showed had become the absolute property of the United States, and already deposited in the Treasury, not only could be paid for interest, but was by law and specific permanent appropriation set apart and dedicated first of all to be applied for that purpose, and is a legal tender for all purposes. Again he says, and that is true, "These certificates could only be issued upon the deposit (in the Treasury) of standard silver dollars." Yet he says the \$11,260,000 "*exceeds the total of silver certificates issued*" by nearly \$5,000,000. I hope the Finance Committee will cause careful inquiry to be made, and advise the Senate by what authority and under what law that state of things is brought about. The Treasurer says the silver certificates received for customs in New York are again "*paid out by that office and again received for customs.*" How they are paid out except on the deposit of an equal amount of silver coin, and how \$11,260,000 of them have reached the custom-house unless that amount of coin has reached the Treasury, is something the Senate ought to know.

It was not necessary that the coin should at once reach the Treasury, though it was absolutely essential that the bullion, for which the checks were given and the certificates paid, should have reached the Mint.

Silver certificates would take the same rapid circuit at San Francisco as at New York, but for the fact that the revenues collected at that point are not always of such volume as to absorb the disbursements of certificates for bullion, and for the further reason that a profit can be made by mailing them to New York to make exchange. As it is, however, they find their way to the New York office, where they are either reissued or, as was formerly the case, canceled, the expense and risk being too great to

warrant their transportation back to the office of issue. This fact accounts for the excess of issues at San Francisco. Washington certificates, also, speedily reach the New York office, to be there reissued.

The certificates have gone into general circulation but little, and they will not, so long as for a small discount of from a thirty-second to a sixty-fourth of one per cent., they can be got rid of through brokers who dispose of them for use in payment of dues to the Government. They circulate quite freely in this city, where the disbursements of standard silver dollars are heavy and the Government receipts, which otherwise might absorb them, are light. With the increased payments of silver dollars made necessary by the decrease in the note balance the volume of certificates may increase, which result will be hastened when the New York Clearing House shall accept them in payment of balances.

The following table shows the amount of silver certificates issued, redeemed, and outstanding from the date of the authorizing act to the end of the fiscal year. The outstanding differs from that of the public debt statement for the same date, by the amount issued and reported too late for entry therein:

Denomination.	Issued.		Redeemed.		Outstanding June 30, 1879.
	During fiscal year.	To June 30, 1879.	During fiscal year.	To June 30, 1879.	
\$10	\$43, 780	\$167, 000	\$3, 170	\$3, 170	\$163, 830
\$5	85, 760	106, 000	500	500	95, 420
\$2	131, 750	145, 000			145, 000
\$1	301, 300	481, 000	5, 300	5, 300	475, 700
\$500	2, 000, 000	2, 268, 000	1, 768, 000	1, 768, 000	500, 000
\$1, 000	6, 587, 000	7, 848, 000	6, 683, 000	6, 683, 000	1, 160, 000
	9, 149, 790	11, 000, 000	8, 460, 050	8, 460, 050	2, 539, 950

#### FRACTIONAL CURRENCY AND FRACTIONAL SILVER COIN.

The issue of fractional silver and the redemption of fractional currency have practically ceased. Under the operation of the law of June 9, 1879, providing for the exchange of fractional silver for lawful money, \$10,423,178 has been taken out of circulation by the Treasury. A demand for it has, however, sprung up, and, under reduced transportation charges and the improved condition of business, it is being reissued from this office and from the various sub-treasuries. The nominal amount of the recent coinage outstanding September 30, was \$26,101,032.53. This, however, is increased by a large amount of the old coinage which has found its way into circulation since 1876.

The coinage of fractional silver at the Mint ceased in February, 1878, and none has been coined since. The total amount issued under the act of April 17, 1876, was \$42,974,931, of which \$16,873,898.47 was in the vaults of the Treasury September 30, 1879.

At the date of the last-mentioned act the total amount of paper fractional currency in circulation was \$41,508,737.48, which has been decreased as shown by the following table, in the sum of \$25,797,773.24, leaving the outstanding at \$15,710,964.24, with an average monthly redemption at this time of only \$30,000, the total redemption for the fiscal year amounting to but \$705,158.67.



*Redemption of fractional currency.*

Month.	Fractional currency outstanding at the close of each month.	Fractional currency redeemed during each month.	Total redeemed to the end of each month.
<b>1876.</b>			
April.....	\$40,860,039 48	\$648,698 00	-----
May.....	37,359,474 30	3,500,565 18	\$4,149,263 18
June.....	34,446,985 39	2,912,878 91	7,062,142 09
July.....	32,902,880 39	1,543,715 00	8,605,857 09
August.....	31,355,311 45	1,547,568 94	10,153,426 03
September.....	29,858,415 62	1,496,895 83	11,650,321 86
October.....	28,555,478 05	1,302,937 57	12,953,259 43
November.....	27,408,508 98	1,146,969 07	14,100,228 50
December.....	26,348,206 45	1,060,302 53	15,160,531 03
<b>1877.</b>			
January.....	25,424,567 14	623,639 31	16,084,170 34
February.....	24,434,420 35	990,146 79	17,074,317 13
March.....	23,440,512 08	993,908 27	18,068,225 40
April.....	22,186,575 52	1,253,936 56	19,322,161 96
May.....	21,206,930 23	979,645 29	20,301,807 25
June.....	20,408,137 34	803,792 89	21,105,600 14
July.....	19,784,385 89	618,801 45	21,724,401 59
August.....	19,172,114 39	612,221 50	22,336,623 09
September.....	18,786,642 27	385,473 12	22,722,095 21
October.....	18,352,574 06	434,067 61	23,156,162 82
November.....	18,043,020 52	309,554 14	23,465,716 96
December.....	17,764,108 90	278,911 62	23,744,628 58
<b>1878.</b>			
January.....	17,471,919 72	292,189 18	24,036,817 76
February.....	17,190,698 14	281,221 58	24,318,039 34
March.....	16,950,115 62	240,582 52	24,558,621 86
April.....	16,805,414 52	144,701 10	24,703,323 96
May.....	16,658,698 68	146,715 94	24,850,038 90
June.....	16,547,768 77	110,929 81	24,960,968 71
July.....	16,455,598 17	92,170 60	25,053,139 31
August.....	16,351,728 10	103,870 07	25,157,009 38
September.....	16,297,429 68	54,298 52	25,211,307 90
October.....	16,211,198 19	86,231 39	25,297,539 29
November.....	16,150,247 22	60,850 97	25,358,390 26
December.....	16,108,158 95	42,188 27	25,400,578 53
<b>1879.</b>			
January.....	\$16,027,500 06	\$80,658 89	\$25,481,237 42
February.....	15,986,416 67	41,083 39	25,522,320 81
March.....	15,925,666 47	60,750 20	25,583,071 01
April.....	15,913,013 85	12,652 62	25,595,723 63
May.....	15,874,781 45	38,232 40	25,633,956 03
June.....	15,843,610 11	82,171 34	25,686,127 37
July.....	15,814,827 56	27,783 55	25,693,909 92
August.....	15,762,069 29	52,758 27	25,746,668 19
September.....	15,747,507 59	14,561 70	25,761,229 89
October.....	15,710,964 24	36,543 35	25,797,773 24

Of the outstanding at the close of the fiscal year, \$1,951,278.69 was in three and five cent notes, none of which denominations have been issued since 1866; \$5,427,538.64 was in ten and fifteen cent notes, and \$8,495,792.78 was in twenty-five and fifty cent notes, less \$32,000 in unknown denominations, destroyed in the Chicago fire.

## MINOR COIN.

The minor coin in the vaults of the various offices amounts to \$1,524,700.57, having increased to that sum from \$157,000 on September 30, 1876, \$870,000 in 1877, and \$1,410,898.50 in 1878. There is, however, a demand for five-cent nickel coin, which can be supplied from the stock on hand. There is also a demand for one-cent bronze pieces necessitating coinage, metal for which is furnished by recoinng the two-cent bronze pieces, of which there is an excess over the demand.

Under the pressure of the standard silver dollar coinage the Philadelphia Mint has been unable to supply the demand for one-cent bronze pieces.

*Minor coins on hand September 30, 1879, by denominations.*

Office by which held.	Five-cent nickel.	Three-cent nickel.	Two-cent bronze.	One-cent bronze, copper-nickel, and copper.	Mixed.	* Total.
Washington .....	\$1,433 00	\$1,050 00	\$200 00	\$377 00	\$403 98	\$3,463 98
Baltimore .....	8,274 00	232 95	70 02	120 59		8,697 56
New York .....	136,243 00	14,700 00	270 00	14,600 00		165,813 00
Philadelphia .....	918,573 00	86,280 00		30,309 00		1,035,252 00
Boston .....	21,030 00	6,051 00	68 00	1,543 04	76 00	28,768 04
Cincinnati .....	9,571 00	2,500 00	40 50	243 15		12,354 65
Chicago .....	20,270 00	5,270 00	100 00	60 00	68	25,700 68
Saint Louis .....	1,500 00				4,500 12	6,000 12
New Orleans .....	2,800 00	1,190 00	500 00	1,430 00		5,920 00
San Francisco .....	4,300 00	600 00	200 00	100 00		5,200 00
Tucson .....					550 38	550 38
Mint U. S., Philadelphia .....	60,258 95	50,553 30	2,502 60	113,665 22		226,980 16
Total .....	1,184,252 95	168,427 34	3,951 12	162,538 00	5,531 16	1,524,700 57

#### REDEMPTION OF NATIONAL-BANK NOTES.

The order issued by direction of the Secretary of the Treasury, requiring the express charges on national-bank notes forwarded for redemption on and after October 1, 1878, to be defrayed by the senders, caused a large decrease in the redemptions of bank notes during the last fiscal year. The amount received for redemption was \$154,768,912.96 as against \$210,490,437.56 received during the preceding year, a falling off of more than 26 per cent. The amount redeemed, assorted, and charged to the banks of issue was \$152,455,000, of which \$112,293,000 was fit, and \$40,162,000 unfit, for circulation. During the preceding year \$203,416,400 was assorted, of which \$151,786,600 was fit, and \$51,629,800 unfit, for circulation; the decrease in fit notes in the last year being \$39,493,600, and in unfit notes \$11,467,800, or a total falling off of \$50,961,400. The number of notes assorted was 18,295,558 as compared with 22,927,842 assorted during the fiscal year 1878. The following table shows the number and amount of national-bank notes redeemed and assorted during each of the five fiscal years which have elapsed since the establishment of the present system of redemption:

Fiscal year.	Number of notes assorted.	Amount of notes assorted.
1875 .....	17,842,310	\$130,322,945
1876 .....	19,111,838	176,121,855
1877 .....	22,745,548	214,361,300
1878 .....	22,927,842	203,416,400
1879 .....	18,295,558	152,455,000
Total .....	100,923,006	876,677,500

Of the above, 51,133,882 notes, representing \$528,614,500, were fit for circulation and were returned to the banks which issued them, and 49,789,214 notes, amounting to \$348,063,000, being unfit for circulation, were destroyed and new notes issued in their stead. In addition to the above there have been redeemed notes of national banks which have

failed, gone into voluntary liquidation, or deposited United States notes for the reduction of their circulation, as follows :

In 1875.....	\$6,579,217
In 1876.....	24,927,900
In 1877.....	24,439,700
In 1878.....	11,852,100
In 1879.....	8,281,550
Total.....	76,080,467

These notes are not properly redeemable by the force employed in handling the national currency, but, being received for redemption, mixed with notes of other banks, the only practicable course was to redeem them and afterwards sort them out and turn them over to the branch by which they are redeemable. As no assessment could be made upon the banks by which they were issued, and there was no means of obtaining reimbursement from the United States for the expense of handling them, the cost has necessarily been included in the assessment on the other banks.

The charges for transportation, under the order of October 1, 1878, show a large decrease, being only \$98,298.75 against \$173,420.60 for the fiscal year 1878. This amount includes the charges incurred during the entire year on national-bank notes received from assistant treasurers for redemption; on United States notes returned for bank notes redeemed; and on assorted bank notes fit for circulation forwarded to the banks of issue, as well as those for the transportation to Washington of all bank notes forwarded for redemption prior to October 1, 1878. The average cost for the charges for transportation when assessed on the entire amount redeemed and assorted, as required by the law, was less than 64½ cents for each \$1,000. The average cost for the preceding year was 85½ cents for each \$1,000.

The expenses of assorting do not show a like reduction for the reason that it was impracticable at once to reduce the force proportionately to the falling off in the work. It was for some time doubtful what the effect of the order in regard to express charges would be, and it was not deemed prudent or just to dispense with the services of tried and expert employes until it had been ascertained what force would be permanently needed. During the last half of the fiscal year, however, the force was considerably reduced, and a saving was made of \$5,447.70 in the amount appropriated for the salaries of the force employed in this office. The number of employes authorized in the appropriation for the current fiscal year was reduced at the Treasurer's instance from 99 to 84. It having been found that even this number was larger than the work required, the force has since been reduced to 62 persons, whose annual salaries amount to \$76,552. This is exclusive of 15 persons employed in the office of the Comptroller of the Currency at an annual expense of \$22,220, which is also included in the assessment on the banks. The total "costs for assorting" were \$142,651.20, which, when assessed on 18,295,558 notes assorted, made an average rate of \$7.79<sup>1</sup>/<sub>10</sub> for each 1,000 notes, as compared with \$6.30½ for the preceding year.

The total expenses of redemption were \$240,949.95, or about \$1.58 for each \$1,000 assorted. The total bank circulation at the close of the fiscal year was \$315,414,334, and the cost of redemption was, therefore, less than one-thirteenth of 1 per cent. on the circulation, or an average of \$68.75 for banks of \$90,000 circulation. The aggregate expenses have steadily decreased during the last three years, being \$365,193.31 for the

fiscal year 1876; \$357,066.10 for 1877; \$317,942.48 for 1878, and, as above stated, \$240,940.95 for 1879, which is less than two-thirds of the cost for 1876.

Although the decrease of redemptions during the last year has been chiefly in notes fit for circulation, the redemptions of notes unfit for circulation show a considerable falling off. The amount of notes unfit for circulation redeemed and assorted during the year ending September 30, 1879, was \$36,899,500, as compared with \$48,492,300 for the year ending September 30, 1878, a decrease of nearly 25 per cent. This falling off is ascribable to the order requiring the holders of the bank-notes to defray the express charges thereon when forwarded for redemption. There is little doubt that this change in the regulations has resulted in a decided deterioration of the bank circulation, and that its condition is gradually growing worse. A large share of the notes now redeemed are extremely dirty and ragged, and ought long ago to have been replaced with new notes. It is therefore recommended that the regulations governing the redemption of national-bank notes be so amended that the holders of notes clearly unfit for circulation may forward them for redemption at the expense of the banks of issue, the express charges thereon to be paid out of the 5 per cent. fund, and afterward assessed upon the several banks of issue in proportion to their circulation redeemed.

Whatever difference of opinion may exist as to the justice of requiring the banks to defray the expense of transporting to the redemption office notes of their issue which are still fit to circulate, there can be no question that they may justly be required to bear the expense of replacing notes which are so dirty or ragged as to be unfit for use. This burden would be no greater than that borne by the banks prior to the establishment of the present system of redemption. Whatever soiled or defaced notes of their issue were redeemed at their own counters, or by the banks designated as their redemption agents in the principal cities, they were required to forward to Washington at their own expense for replacement with new notes. To require them to defray the charges on such notes would only be to relegate them to the position which they occupied prior to the passage of the act of June 20, 1874. The principle should be frankly recognized by both the Government and the banks that the issuers of the circulation of the country are bound to maintain it in good condition—an obligation which can be fulfilled only by providing the holder of soiled and mutilated notes with the means of converting them into clean notes promptly and without expense.

The method of redeeming and making payment for bank notes has been in no wise affected by the resumption of specie payments. The act of June 20, 1874, although requiring each national bank "to keep and have on deposit in the Treasury of the United States in lawful money of the United States a sum equal to 5 per centum of its circulation, to be held and used for the redemption of such circulation," nevertheless declares that the bank notes on presentation to the Treasurer in sums of one thousand dollars, or any multiple thereof, "shall be redeemed in United States notes," and furthermore requires the national banks to reimburse the Treasurer for their notes redeemed by deposits of United States notes. These provisions of law have been strictly enforced. The banks have been required to deposit United States notes in reimbursement for their notes redeemed, and all notes presented for redemption have been paid for in United States notes, except when standard silver dollars or fractional silver coins were preferred by the holder. In one or two cases, where gold coins were tendered for credit of the 5



per cent. fund, they were accepted, but with the distinct understanding that such acceptance should not prejudice the right of the Treasurer to require future deposits on that account to be made in United States notes. It is not considered desirable that any change should be made in the law or the practice in this respect. To permit deposits on account of the 5 per cent. redemption fund to be made in gold coin or silver dollars would necessarily lead to the payment of those coins in redemption of bank notes. If the coins so paid out should be forwarded to the owners of the bank-notes by express, it would subject them to such expense as to practically prevent redemptions. The only alternative would be to make payments by coin drafts on the principal cities. The objection might properly be made to this course that it would convert the redemption office into an agency for furnishing exchange, and that redemptions would be determined not by the condition of the notes or a desire for their conversion into lawful money, but by the holder's needs for exchange. So long as the United States notes remain in circulation and retain their legal-tender character and their redeemability in coin, economy and convenience will both be promoted without any sacrifice of principle by continuing to make them the basis of the system of bank-note redemption.

#### SEMI-ANNUAL DUTY.

The semi-annual duty assessed and collected by the Treasurer of the United States from national banks for the fiscal year 1879 is as follows:

On circulation .....	\$3,009,647 16
On deposits .....	3,309,668 90
On capital .....	401,920 61
Total .....	6,721,236 67

The total amount of semi-annual duty collected by this office from the national banks for the fiscal years 1864 to 1879, which is more fully set forth in Table 16 of the appendix, is as follows:

On circulation .....	\$42,787,526 30
On deposits .....	43,644,693 50
On capital .....	6,337,479 12
Total .....	92,769,698 92

#### DEPOSITARY BANKS.

The total receipts of public money during the fiscal year by depositary banks, exclusive of receipts on loan account, were \$109,397,525.67, the average daily balance being at this time about \$8,000,000, secured by the deposit with this office of some \$15,000,000 in United States bonds. The receipts of public money by depositary banks from 1864 to 1879, inclusive, aggregate \$3,418,147,872.47, which, with the exception of a very small amount, has been accounted for to the Treasury. There were at the close of the fiscal year 127 depositary banks, exclusive of those designated in connection with refunding operations, four of which were designated during the year. One bank was discontinued as a depositary during the year.

The following statement shows the receipts, disbursements, and bal-

ances of public money, as shown by the Treasurer's account with depository banks, during the fiscal years from 1864 to 1879:

Fiscal year.	Receipts.	Funds transferred to depository banks.	Funds transferred to the Treasury by depository banks.	Drafts drawn on depository banks.	Balance at close of year.
1864	\$153,205,108 71	\$816,000 00	\$85,507,674 08	\$28,726,695 28	\$39,976,738 75
1865	987,564,639 14	8,110,294 70	583,697,912 72	415,887,767 81	36,065,992 06
1866	497,666,676 42	13,523,972 62	303,685,565 65	149,772,756 11	34,294,319 34
1867	351,737,683 83	8,405,903 63	331,639,872 57	37,218,612 76	26,182,821 47
1868	225,244,144 75	9,404,392 00	215,311,460 69	22,218,187 02	23,301,709 61
1869	105,100,573 67	16,652,199 44	114,748,877 24	14,890,463 75	8,875,141 73
1870	\$20,044,041 79	2,406,521 06	111,123,936 18	11,818,228 61	8,483,549 79
1871	99,290,840 85	2,633,129 45	89,428,544 04	13,790,961 01	7,197,015 04
1872	160,104,855 16	3,050,444 05	94,938,603 76	13,635,837 49	7,777,873 00
1873	169,602,743 98	9,604,842 49	168,089,786 76	16,110,519 07	62,185,153 64
1874	91,108,846 70	2,720,958 81	134,809,112 57	13,364,554 52	7,790,292 06
1875	98,228,249 53	1,737,445 60	82,184,304 05	13,637,678 25	11,914,004 89
1876	97,402,227 57	2,445,451 49	89,981,146 09	13,909,616 83	7,870,920 13
1877	106,470,261 22	2,353,196 29	94,276,400 35	14,862,200 88	7,555,776 41
1878	99,781,053 48	2,385,920 38	90,177,963 35	12,606,870 60	6,937,916 32
1879	169,397,525 67	6,890,489 06	160,498,469 29	15,544,058 34	7,183,403 42
Total	3,418,147,872 47	86,010,161 07	2,688,930,020 29	808,015,009 83	.....

#### PAYMENT OF HALIFAX AWARD.

On November 23, 1877, the commissioners appointed under the treaty of Washington of May 8, 1871, awarded the sum of \$5,500,000, to be paid within twelve months after the award, by the Government of the United States to the Government of Her Britannic Majesty in return for the privilege accorded to the citizens of the United States under article eighteen of that treaty.

The above sum was appropriated during the second session of the Forty-fifth Congress, in gold coin, and placed under the direction of the President for the payment of the award. Under date of October 21, 1878, the President issued the following direction to the Secretary of the Treasury:

In pursuance of section three of the act of Congress entitled "An act making appropriations for sundry civil expenses of the Government," &c., approved June 20, 1878, whereby it is provided that the sum of five and one-half millions of dollars in gold coin be placed under the direction of the President for the purpose in said section mentioned, I hereby desire and direct that that sum be placed immediately to the credit of the Secretary of State.

The above order was on that date transmitted to the Treasurer with the following indorsement by the Secretary of the Treasury: "You will please pay the coin within named to Hon. W. M. Evarts, Secretary of State of the United States, or to his order."

On the same day a check in the following form was transmitted by the Treasurer by special messenger to the Assistant Treasurer at New York: "Place to the credit of Hon. William M. Evarts, Secretary of State, and subject to his check in that capacity, five million five hundred thousand dollars in gold coin, and charge coin transfer account." The coin was paid out upon the check of the Secretary of State given in payment for exchange on London. The Treasurer was afterwards reimbursed for the expenditure by the Department and the account adjusted.

#### SALE OF EXCHANGE.

For the purpose of supplying those offices with funds, there was sold at the New Orleans office \$1,000,000 of New York exchange; at the San Francisco office \$320,000 of New York exchange, and at the office at Tucson \$335,000 of New York and San Francisco exchange, which was furnished the offices selling exchange from this office by its checks on the last-mentioned points.

## CLEARING-HOUSE CERTIFICATES.

These certificates were first issued in the fiscal year 1873 for the better security of bank reserves and to facilitate bank clearing-house exchanges. They are issued to national banks only, on deposit of United States notes, and amounted at the close of the fiscal year to \$554,730,000, of which amount there had been redeemed \$525,400,000, leaving the amount outstanding \$29,330,000. The issues during the past fiscal year were \$89,765,000, and the redemptions \$106,680,000; the excess of redemptions over issues indicating the demand for United States notes on the part of the banks. The following table shows the amount of these certificates issued, redeemed, and outstanding for the fiscal years 1873 to 1879 inclusive. It differs from the public debt statement for the reason that certificates are issued and redeemed at various offices too late in the month to be reported and taken up in that statement:

Year.	Issued.	Redeemed.	Outstanding as per Treasurer's books.
1873 .....	\$57,240,000	\$25,430,000	\$31,810,000
1874 .....	137,905,000	78,915,000	58,990,000
1875 .....	219,000,000	159,955,000	59,045,000
1876 .....	301,400,000	268,260,000	33,140,000
1877 .....	378,285,000	324,305,000	53,980,000
1878 .....	464,965,000	418,720,600	46,245,000
1879 .....	554,730,000	525,400,000	29,330,000

## GOLD CERTIFICATES.

The issue of gold certificates having been discontinued by direction of the Secretary of the Treasury on December 1, 1878, the amount outstanding decreased from \$44,367,000 on June 30, 1878, to \$15,413,700 on June 30, 1879. The amount issued during the fiscal year was \$12,317,400 and the amount redeemed \$41,270,700. The issue of these certificates was authorized by the fifth section of the act of March 3, 1863 (12 Statutes, 711), but none were issued until November 13, 1865. Since that date certificates have been issued amounting in the aggregate to \$981,134,880.46, of which \$22,853,480.46 were issued through this office, and the remainder through the office of the Assistant Treasurer in New York. The entire amount of Washington certificates has been redeemed.

The following table shows the amount of gold certificates issued and redeemed during each fiscal year from 1866 to 1879, inclusive, the grand total issued and redeemed, and the amount outstanding at the close of each year:

Period.	Issued during the fiscal year.	Total issued.	Redeemed during the fiscal year.	Total redeemed.	Outstanding.
From November 13, 1865, to June 30, 1866 .....	\$98,493,860 00	\$98,493,860 00	\$87,545,800 00	\$87,545,800 00	\$10,947,860 00
In fiscal year 1867 ...	109,171,620 00	207,615,280 00	101,295,900 00	188,841,700 00	18,773,580 00
In fiscal year 1868 ...	77,960,400 00	285,575,680 00	79,055,340 00	267,897,040 00	17,678,640 00
In fiscal year 1869 ...	80,663,160 00	366,238,840 00	65,255,620 00	333,152,660 00	33,086,180 00
In fiscal year 1870 ...	76,781,060 00	442,969,900 00	75,270,120 00	408,422,780 00	34,547,120 00
In fiscal year 1871 ...	56,577,000 00	499,546,900 00	71,237,320 00	479,660,000 00	19,886,300 00
In fiscal year 1872 ...	63,229,500 00	562,776,400 00	51,029,500 00	530,690,100 00	32,086,300 00
In fiscal year 1873 ...	55,570,500 00	618,346,900 00	48,196,800 00	578,886,900 00	39,460,000 00
In fiscal year 1874 ...	81,117,780 46	699,464,680 46	97,752,680 46	676,639,580 46	22,825,100 00
In fiscal year 1875 ...	70,250,100 00	769,714,780 46	71,378,900 00	747,918,480 46	21,796,300 00
In fiscal year 1876 ...	90,619,100 00	860,333,880 46	83,734,000 00	831,652,480 46	28,681,400 00
In fiscal year 1877 ...	58,141,200 00	918,475,080 46	45,250,000 00	876,902,480 46	41,572,600 00
In fiscal year 1878 ...	50,342,400 00	968,817,480 46	47,548,000 00	924,450,480 46	44,367,000 00
In fiscal year 1879 ...	12,317,400 00	981,134,880 46	41,270,700 00	965,721,180 46	15,413,700 00



## REGISTERED INTEREST CHECKS.

There were drawn during the fiscal year in payment of quarterly interest upon registered stock, checks as follows: Five per cent. funded loan of 1881, 33,019 checks; four and a half per cent. funded loan of 1891, 42,679 checks; four per cent. consols of 1907, 122,465 checks; in all, 198,163 interest checks, besides which there were issued 69,939 transfer checks, 37,735 drafts on warrants of the Secretary and 12,719 on warrants of the Post-Office Department; in all, 318,556 signatures. The labor of signing so many checks and drafts was so excessive by reason of the increase in the number of interest checks required to pay the dividends which occur monthly on some one of the stocks above mentioned, that it became a physical impossibility to make the number of signatures required, which often amounted to more than 70,000 during the month in which checks for interest on the four per cent. loans are prepared. The checks required to pay the last dividend upon that loan were 53,000 and are increasing in number, and as the schedules from which they are to be drawn cannot be prepared for the printer by the Register of the Treasury and printed until after the closing of the transfer books of the Department on the first of the month preceding the date on which the interest is payable, it is apparent that the Treasurer and his assistant cannot sign them in the limited time, which does not exceed twenty days. It became necessary, therefore, to devise some other means to authenticate interest checks. They are consequently now prepared with the printed signature of the Treasurer, and when filled in with the name of the holder of the stock and the amount of interest due thereon they are countersigned, for which latter duty three gentlemen of the office have been designated with the approval of the Secretary of the Treasury.

## COUPON INTEREST.

There was paid during the fiscal year in coupon interest upon United States bonds \$42,579,209.56. The change from semi-annual payments of interest on the old loans to quarterly payments on the new increases the number of coupons to be paid, all of which, after payment, are sent from the sub-treasury offices to this office, where the interest account is made up before being transmitted to the accounting officers for settlement.

## MUTILATED, STOLEN, AND COUNTERFEIT CURRENCY.

The deductions, on account of mutilations, from the face-value of currency redeemed during the fiscal year amounted to \$10,978.74, made up as follows: On old demand notes \$2.50, on United States notes \$9,897, on fractional currency \$871.24, and on notes of failed, liquidating, and reducing national banks \$208. The total deductions on this account to the close of the fiscal year amounted to \$286,696.03, on notes of the face-value of \$2,141,196,053.03 redeemed. This includes \$1,306.25 deducted from notes of banks winding up or reducing their circulation, of the face-value of \$91,010,125. During the fiscal year there were rejected \$6,282.58 in stolen, pieced, and fragmentary national-bank notes, and there were rejected, branded, and returned to the owners \$4,722 in counterfeit United States notes, \$1,331.45 in counterfeit fractional currency, and \$3,016 in counterfeit national-bank notes.

## PACIFIC RAILROAD SINKING FUNDS.

Section 3 of the act approved May 7, 1878 (20 Statutes, 58), requires that there shall be established in the Treasury of the United States a sinking fund, which, with the semi-annual income thereof, shall be invested by the Secretary of the Treasury in five per cent. bonds of the

United States. Section 4 requires that there shall be carried to the credit of that fund one-half of the compensation for services rendered for the Government by the Central Pacific and Union Pacific Railroad Companies, and that the Central Pacific Railroad Company shall pay into the Treasury to the credit of the sinking fund, on the 1st day of February in each year, \$1,200,000, and the Union Pacific Railroad Company \$850,000, or so much of those sums as shall be necessary to make the five per cent. of their net earnings payable to the United States under the act of July 1, 1862 (12 Statutes, 489), and the whole sum earned by them as compensation for services rendered for the United States, together with the sum required to be paid by this section, amount in the aggregate to twenty-five per centum of their whole net earnings for the year ending on the 31st day of December next preceding.

In pursuance of instructions from the Secretary of the Treasury dated January 29, 1879, the sums which had been withheld from the companies from July 1, 1878, to that date, under the act above cited, were invested in five per cent. bonds of the funded loan of 1881, registered in the name of the "Treasurer of the United States, custodian, for the Secretary of the Treasury, trustee," and stamped as required by the act so as to show that they belong to the sinking funds for those companies respectively, and that they are not good in the hands of other holders than the Secretary of the Treasury until they shall have been indorsed by him and disposed of as required by the act.

Further investments of the same nature have been made from time to time of the amounts withheld since that date. The amount of bonds held on account of the sinking fund for each company is now as follows :

Union Pacific Railroad Company .....	\$256,450
Central Pacific Railroad Company .....	194,900

The interest accruing on the bonds is deposited in the Treasury as it falls due, as a miscellaneous receipt on account of the proper fund, and is subsequently withdrawn and applied in the same manner as the moneys originally withheld from the companies.

The first payments under section 4 were due and payable February 1, 1879, but have been withheld from the United States, with the exception of \$220,520.78 from the Central Pacific Railway Company, pending the decision of the Supreme Court, recently rendered as to the constitutionality of the act in question, which was contested by the railway companies affected thereby.

#### TRUST FUNDS.

The bonds and stocks of the Indian Trust Fund, at the close of the fiscal year, in custody of this office in conformity with the act of Congress of June 10, 1876, amounted to \$5,180,066.83½. Of this amount \$2,965,750 were United States bonds as follows:

Six per cent. bonds of 1881.....	\$500
Pacific Railroad bonds, currency 6s .....	280,000
Ten-forty bonds, 5 per cent .....	86,400
Consols of 1868, 6 per cent .....	10,000
Funded loan of 1881, 5 per cent.....	2,188,900
Consols of 1907, 4 per cent.....	399,950
	<hr/>
	2,965,750

The remainder, amounting to \$2,214,316.83½, consisting of bonds issued by States, or under the authority of State enactments, are set forth in a table in the appendix to this report. The following States have over due and unpaid interest-bonds in these funds: Arkansas, Florida, Louisiana, North Carolina, South Carolina, Tennessee, and Virginia. The bonds of States and companies upon which interest is received are as



follows: Indiana, Maryland, the North Carolina Railroad Company, the Nashville and Chattanooga Railroad Company, and the Richmond and Danville Railroad Company. Of the principal of the bonds of the latter company, \$103,500 became due in 1876, but in pursuance of authority of the Secretary of the Interior, in 1877, the time of payment was extended without date, in consideration of what was deemed to be ample security of the bonds, and the future prompt payment, semi-annually, of the interest thereon, which has been regularly made by the said company. No interest is received on the bonds of the Chesapeake and Ohio Canal Company, issued under authority of the State of Maryland, and guaranteed by the State of Virginia, the same being in arrears from January and July, 1861. In pursuance of authority from the Secretary of the Treasury and the Secretary of the Interior, certain past due coupons from bonds of the State of Tennessee, amounting to \$22,949.49, were surrendered to said State on the 22d day of May last. The delivery was made to a duly authorized agent of the State on account of an appropriation made at the last session of Congress in behalf of the State for keeping United States prisoners, the amount being retained by the Department under section 3481 of the Revised Statutes of the United States to cover a portion of the unpaid interest on Tennessee bonds belonging to this fund. Referring to the bonds of the State of North Carolina, interest on \$147,000 is paid by a receiver appointed by the State to make allotment of interest upon the stock guaranteed by the State in the North Carolina Railroad Company. Payment of the interest on these bonds is in arrears about three years, the payments made during the current year being for the year 1876. Of the \$5,180,066.83 $\frac{1}{2}$ , stocks and bonds of the Indian Trust Fund, interest is now paid on \$3,742,600.17, the remainder, \$1,437,466.66 $\frac{2}{3}$ , being unremunerative.

Since the close of the fiscal year the ten-forty bonds and consols of 1868 referred to above, having been called in, have been redeemed, and the proceeds invested in United States four per cent. bonds, subject to the action of Congress. By existing provisions of law, trust funds held by the United States are required to be invested at not less than five per cent. Government securities at that rate can at this time be obtained only by purchase in the market at a premium, and only of loans that mature in 1881, which would not, therefore, net as much as the four per-cents obtained at par. The trust funds of the Indians have, by the process of buying other securities at a premium upon the maturity of the securities in which they were invested, been considerably reduced heretofore by conversion at a lower rate, and it is a question whether treaty stipulations have been strictly regarded by the United States in the management of these trusts.

To avoid complications and future claims the amounts due from the United States should be inscribed upon the books of the Department and interest at the proper rate paid upon the Secretary's warrant, as in the case of the Smithsonian trust funds.

#### *American Printing House for the Blind.*

The act of March 3, 1879, appropriates and sets apart \$250,000 as a perpetual fund for the education of the blind in the United States, through the "American Printing House for the Blind," and directs the Secretary of the Treasury "to hold said sum in trust for the purpose aforesaid" and invest it in United States four per cent. bonds, paying over the interest to the trustees of the American Printing House for the Blind, located in Louisville, Ky., upon the requisition of their president, countersigned by their treasurer. Pursuant to these provisions, \$250,000 in four per cent. bonds, consols of 1907, registered in the name of the Secretary

of the Treasury as trustee, have been issued and deposited in this office, the interest on which as it accrues is deposited to the credit of the appropriation "To promote the education of the blind," and afterwards drawn out in the manner specified in the law.

*Pennsylvania Company.*

The provisions of Department Circular No. 146, dated November 29, 1876, permit carriers of dutiable merchandise, in lieu of sureties, to deposit with this office United States registered bonds equal in amount to the prescribed penalty of the transportation bond. Under that authority \$200,000 in registered bonds of the funded loan of 1891 are held in trust for the Pennsylvania Company for the security of unappraised dutiable merchandise and dutiable merchandise in bond.

*Manhattan Savings Institution.*

Under the provisions of the act of December 19, 1878, for the relief of the Manhattan Savings Institution of New York, duplicates of registered United States bonds alleged to have been stolen from its vaults were issued to the Treasurer, in trust for that institution, to the amount of \$800,000. Subsequently a less amount being deemed sufficient to protect the United States from loss, portions thereof have been surrendered at various times, leaving \$250,000 now on deposit.

CONCLUSION.

For additional information pertaining to the public business transacted by this office, your attention is invited to the various tables of the appendix to this report.

I desire also to bear witness to the general faithfulness and industry of the subordinate officials and employes, almost all of whom are constantly intrusted with the handling of money and securities, and many with the receipt and disbursement of large amounts. To their integrity, skill, and carefulness is due the fact that there has been no loss of public money from this office during the year.

Very respectfully,

JAS. GILFILLAN,  
*Treasurer of the United States.*

Hon. JOHN SHERMAN,  
*Secretary of the Treasury.*

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REPORT OF THE REGISTER OF THE TREASURY.

TREASURY DEPARTMENT,  
REGISTER'S OFFICE,  
Washington, November 1, 1879.

SIR: I have the honor to submit herewith a report in detail of the work performed in the several divisions of this bureau during the year ended June 30, 1879:

LOAN DIVISION.

The total number of United States coupon and registered bonds issued during the year was 711,363, as follows:

Coupon bonds.....	438, 711
Registered bonds.....	272, 652

## of bonds canceled:

.....	258,547
s.....	135,565
.....	394,112

## issued:

coupon).....	\$249,249,300 00
registered).....	323,927,250 00
issued in exchange for coupon (Oregon war debt).....	14,200 00
s issued in exchange for coupon.....	121,336,550 00
s issued upon transfers.....	452,461,583 66
.....	1,147,032,883 66

n preceding year.....	\$462,117,913 15
present year.....	684,920,970 51

## anceled:

converted into registered.....	121,336,550 00
s transferred.....	452,461,583 66
transferred (Oregon war debt).....	14,200 00
s redeemed (per records of this office).....	102,072,200 00
redemed (per records of this office).....	47,043,300 00
.....	722,927,833 66

eled coupon bonds turned over to committee for de-.....	\$157,562,000 00
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the vault account shows that there was on hand July ing bonds held by Treasury agent abroad.....	548,797,250 00
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## received during the year:

.....	227,650,000 00
s.....	1,469,235,200 00
per cent. bonds, District of Columbia.....	3,350,000 00
.....	2,249,072,450 00

## disposed of during the year:

issued.....	\$249,263,500 00
s issued.....	894,835,100 00
per cent. District of Columbia bonds issued.....	2,904,000 00

## delivered for destruction:

s.....	87,431,900 00
per cent. District of Columbia bonds.....	771,750 00

## June 30, 1879:

.....	52,932,650 00
s.....	949,536,050 00
per cent. District of Columbia bonds.....	446,000 00
ty of agent in Europe.....	10,961,500 00
.....	2,249,072,450 00

average issue has been nearly twenty-three hundred bonds,  
three million eight hundred thousand dollars, almost treble  
of the preceding year.





	Num y	Amo	Num pot	Amo	Num ter	Amo	Amo
Spanish indemnity	R					\$36,283 66	\$36,283 66
1861—February 8	C		246	\$246,000	0		246,000 00
Oregon war	C				986	3,424,000 00	3,424,000 00
1861—July 17	C		8,036	5,989,950	60	14,200 00	11,269 00
1862	C	100			6,526	24,295,000 00	5,989,950 00
1863	C						24,295,000 00
1864—10-40s	C		2,801	2,137,000			2,137,000 00
1864—June 30	C	71	2,002	1,408,400	3,108	10,668,200 00	10,668,200 00
1865	C	387			5,734	31,236,800 00	1,408,400 00
Consols of 1865	C	86,736					31,236,800 00
Consols of 1867	C	11,431					28,700 00
Consols of 1868	C	2,627					257,900 00
Pacific Railroad bonds	C	14,065					8,000 00
5 per cent. funded, 1881	C	4,423,900					47,016,450 00
4 1/2 per cent. funded, 1891	C	4,000					104,404,050 00
4 per cent. funded, 1907	C	1,564,500					38,902,800 00
3.65 per cent. District of Columbia	C	295					131,553,250 00
Total		115,792	108,516	121,336,550	109,805	452,475,783 66	722,927,853 66

\* As per records of this office.

## NOTE AND COUPON DIVISION.

At the close of the fiscal year ending June 30, 1879, the employes of this division consisted of twenty-eight clerks, ten males and eighteen females, and two messengers.

The whole number of clerks employed during the year was thirty-three, ten males and twenty-three females.

The average number of clerks per month during the year was twenty-six, eight males and eighteen females.

The following consolidated statement exhibits the character and amount of work accomplished during the fiscal year ending June 30, 1879.

*Redeemed, exchanged, and transferred United States bonds, with coupons attached, examined, registered, and scheduled for destruction.*

Authorizing act.	No. of bonds.	Amount.	No. of coupons.
March 3, 1865, May and November .....	80, 104	\$69, 688, 300	1, 289, 017
March 3, 1865, consols .....	39, 912	20, 184, 850	568, 569
July 17 and August 5, 1861 .....	6, 229	4, 831, 600	33, 495
July 14, 1870, and January 20, 1871; funded loan 1881, 5 per cent. ....	46, 973	42, 171, 800	609, 868
July 14, 1870, and January 20, 1871; funded loan 1891, 4½ per cent. ....	19, 298	16, 350, 200	1, 012, 014
July 14, 1870, and January 20, 1871; consols 1907, 4 per cent. ....	23, 763	16, 406, 000	2, 751, 176
	216, 279	169, 092, 750	6, 264, 139

*Treasury-notes, interest coin-checks, coin and currency certificates, assorted, arranged, counted, registered, and compared.*

Notes, interest coin-checks, and certificates.	Authorizing act.	No. of pieces.	Amount.
Three years' 7½ Treasury-notes .....	July 17, 1861	3	\$200 00
Certificates of indebtedness .....	Mar. 1, 1862	1	1, 000 00
One and two years' 5 per cent. notes .....	Mar. 3, 1863	145	3, 630 00
Coin-certificates .....	do	28, 875	58, 482, 000 00
Three years' 6 per cent. compound-interest notes .....	Mar. 3, 1863	650	14, 130 00
Three years' 7½ Treasury-notes .....	June 30, 1864	89	10, 350 00
Interest coin-checks, 1881 .....	Mar. 3, 1863		
Interest coin-checks, 1891 .....	July 14, 1870	17, 417	7, 335, 186 29
Interest coin-checks, 1891 .....	Jan. 20, 1871		
Interest coin-checks, 1907 .....	July 14, 1870	16, 681	4, 323, 243 58
Interest coin-checks, 1907 .....	Jan. 20, 1871		
Currency-certificates .....	July 14, 1870	12, 631	1, 222, 142 03
Currency-certificates .....	Jan. 20, 1871		
Interest checks, old funded debt, District of Columbia .....	June 8, 1872	5, 997	54, 105, 000 00
		581	27, 478 59
		83, 070	125, 524, 360 49

Redeemed coupons detached from bonds and notes, assorted, arranged numerically, and counted, 2,628,560; registered, 2,394,689; examined and compared, 2,361,691.

## NOTE AND FRACTIONAL CURRENCY DIVISION.

*Statement showing the number of notes and amount of United States notes and fractional currency examined, counted, canceled, and destroyed for the fiscal year ending June 30, 1879.*

	No. of notes.	Amount.
United States notes, new issue .....	229, 622	\$2, 336, 000
United States notes, series 1869 .....	3, 164, 261	25, 899, 150
United States notes, series 1874 .....	2, 708, 267	6, 463, 350
United States notes, series 1875 .....	10, 365, 390	25, 502, 450
United States notes, series 1878 .....	1, 030, 663	2, 577, 850
United States demand notes .....	118	785
United States fractional currency, 1st issue .....	21, 340	7, 990
United States fractional currency, 2d issue .....	35, 600	6, 435
United States fractional currency, 3d issue .....	83, 668	8, 855
United States fractional currency, 4th issue .....	600, 000	87, 000
United States fractional currency, 4th issue, 2d series .....	40, 000	20, 000
United States fractional currency, 4th issue, 3d series .....	144, 000	72, 000
United States fractional currency, 5th issue .....	2, 899, 000	523, 600
	21, 341, 929	63, 505, 465

# TONNAGE DIVISION.

tonnage of the country exhibits a decrease of 43,164 tons, tonnage having increased 92,242 tons, the licensed (under tons, while the registered tonnage has decreased 137,514

ate has been reduced by vessels lost at sea and sold to foreign years past, which were not reported to this office or taken age balance until the past year. This alone amounts to ease from the previous year.

Given the totals for the last two years:

	1878.		1879.	
	Vessels.	Tons.	Vessels.	Tons.
.....	3,037	1,629,047	2,717	1,491,533
.....	22,227	2,583,717	22,494	2,678,097
.....	25,264	4,212,764	25,211	4,169,601

Comparison of the different classes of vessels is as follows:

	1878.		1879.	
	Vessels.	Tons.	Vessels.	Tons.
.....	17,523	2,521,319	17,042	2,422,813
.....	4,472	1,167,078	4,569	1,176,172
.....	1,071	68,691	1,296	103,738
.....	2,198	435,076	2,394	466,878
.....	25,264	4,212,764	25,211	4,169,601

seen from the foregoing that the steam-tonnage has increased 15,046 tons, the canal-boat tonnage 15,046 tons, and the barge tonnage, while the sailing-tonnage has decreased 98,506 tons. Tonnage of the sailing-tonnage registered is 55 per centum, and tonnage 13 per centum.

# SHIP-BUILDING.

Following table exhibits the class, number, and tonnage of the vessels built during the last two years:

	1878.		1879.	
	Vessels.	Tons.	Vessels.	Tons.
.....	532	106,067	468	66,867
.....	334	61,860	335	86,361
.....	19	1,908	36	4,069
.....	873	45,669	293	35,733
.....	1,258	235,504	1,132	193,030

From the foregoing it appears that the amount built during the past year was 42,474 tons than that of the preceding year.

The tonnage built during the last two years in the several grand divisions of the country is shown below:

	1878.		1879.	
	Vessels.	Tons.	Vessels.	Tons.
Atlantic and Gulf coasts.....	634	143,805	592	104,475
Pacific coast.....	63	11,333	65	11,207
Northern lakes.....	101	11,438	95	15,135
Western rivers.....	460	68,928	380	62,213
Total.....	1,258	235,504	1,132	193,030

The following table exhibits the iron tonnage built in the country since 1868:

	1868.	1869.	1870.	1871.	1872.	1873.	1874.	1875.	1876.	1877.	1878.	1879.
Sailing vessels.....		1,039	679	2,067								
Steam-vessels.....	2,801	3,543	7,602	13,412	12,766	26,548	33,097	21,632	21,346	5,927	26,960	22,008
Total.....	2,801	4,584	8,281	15,479	12,766	26,548	33,097	21,632	21,346	5,927	26,960	22,008

Tables showing the amount of iron tonnage outstanding may be found in Part 2, Report on Commerce and Navigation.

#### THE FISHERIES.

The tonnage engaged in the fisheries during the last two years is as follows:

	1878.		1879.	
	Vessels.	Tons.	Vessels.	Tons.
Cod and mackerel fisheries.....	2,435	88,546	2,571	79,885
Whale fisheries.....	182	39,700	185	40,028

Below is shown the amount of tonnage employed in the cod and mackerel fisheries, with the per centum of each State:

State.	Tonnage.	Per cent.
Maine.....	19,359	24.4
New Hampshire.....	1,062	1.3
Massachusetts.....	41,755	52.2
Rhode Island.....	2,794	3.5
Connecticut.....	4,835	6.0
New York.....	7,886	9.9
New Jersey.....	25	0.0
Pennsylvania.....	5	0.0
Virginia.....	20	0.0
California.....	2,124	2.6
Oregon.....	70	0.1
Total.....	79,885	100.0

This shows a decrease of about 8 per cent. during the year.

employed in the whale fisheries is given below:

Customs districts.	1878.		1879.	
	Vessels.	Tons.	Vessels.	Tons.
.....	4	423	5	531
.....	23	2,209	20	1,940
.....	3	634	4	720
.....	141	34,882	144	35,208
.....	11	1,532	12	1,629
.....	2	132	.....	.....
.....	182	39,700	185	40,028

re nearly 88 per cent. belongs at New Bedford. Complete  
g the various classes of tonnage may be found in the ap-  
report.

#### DIVISION OF RECEIPTS AND EXPENDITURES.

ing statement exhibits the work of this division for the  
June 30, 1879:

warrants registered during the year for civil, diplo- matics, internal-revenue, and public-debt expendi- ments was .....	24,025	
g year .....	22,145	
.....		1,880
warrants registered for receipts from customs, lands, ue, direct tax, and miscellaneous sources, was.....	11,220	
g year .....	10,924	
.....		296
warrants registered for payments and repayments in y, and Interior (pension and Indian) Departments was	16,797	
g year .....	11,332	
.....		5,465
drafts registered was .....	40,760	
g year .....	30,112	
.....		10,648
journal pages required for the entry of accounts relat- iv, diplomatic, internal-revenue, miscellaneous, and receipts and expenditures was .....	5,432	
g year .....	5,087	
.....		345
certificates furnished for settlement of accounts was.	12,759	
g year .....	12,933	
.....		174
f accounts received from the First and Fifth Auditors	22,862	
sioner of General Land Office was .....	21,578	
g year .....		1,284

ndix will be found a statement of the receipts and expenditures of the  
required by the standing order of the House of Representatives of De-  
91, and section 237 of the Revised Statutes; also, statements of the  
ed and number of persons employed, and the occupation and salary of  
each custom-house, as required by section 258 of the Revised Statutes.  
pectfully, your obedient servant,

G. W. SCOFIELD,  
Register.

SHERMAN,  
of the Treasury.

*Statement of outstanding principal of the public debt of the United States on the 1st of January of each year from 1791 to 1842, inclusive; and on the 1st of July of each year from 1843 to 1879, inclusive.*

January 1, 1791.....	\$75,463,476 52	January 1, 1836.....	\$336,057 83
1792.....	77,227,024 66	1837.....	3,305,124 07
1793.....	80,352,634 04	1838.....	10,434,221 14
1794.....	78,427,404 77	1839.....	3,573,243 82
1795.....	80,747,587 39	1840.....	5,250,875 54
1796.....	83,762,172 07	1841.....	13,594,490 73
1797.....	82,064,479 33	1842.....	20,601,226 28
1798.....	79,228,529 12	July 1, 1843.....	32,742,923 00
1799.....	73,408,669 77	1844.....	23,461,652 50
1800.....	82,976,294 35	1845.....	15,925,303 01
1801.....	83,038,053 80	1846.....	15,550,202 97
1802.....	86,712,632 25	1847.....	38,826,534 77
1803.....	77,054,688 30	1848.....	47,044,862 23
1804.....	86,427,120 88	1849.....	63,061,858 69
1805.....	82,312,150 50	1850.....	63,452,773 55
1806.....	75,723,270 66	1851.....	68,304,796 02
1807.....	69,218,393 64	1852.....	66,189,341 71
1808.....	65,196,317 97	1853.....	59,803,117 70
1809.....	57,023,102 09	1854.....	42,246,222 42
1810.....	53,173,217 52	1855.....	35,586,858 56
1811.....	48,005,587 76	1856.....	31,972,537 90
1812.....	45,209,737 90	1857.....	28,699,831 85
1813.....	55,962,827 57	1858.....	44,911,881 03
1814.....	81,487,846 24	1859.....	58,496,837 88
1815.....	99,833,660 15	1860.....	64,842,287 88
1816.....	127,334,933 74	1861.....	90,580,873 72
1817.....	123,491,985 16	1862.....	524,170,412 13
1818.....	103,466,633 83	1863.....	1,110,772,138 63
1819.....	95,529,648 28	1864.....	1,615,784,370 57
1820.....	91,015,566 15	1865.....	2,680,647,869 74
1821.....	89,987,427 66	1866.....	2,773,236,173 69
1822.....	93,540,676 98	1867.....	2,678,126,103 87
1823.....	90,875,877 28	1868.....	2,611,687,851 19
1824.....	90,269,777 77	1869.....	2,588,452,213 94
1825.....	83,788,432 71	1870.....	2,480,672,427 61
1826.....	81,054,059 99	1871.....	2,353,211,332 32
1827.....	73,987,357 20	1872.....	2,233,251,078 78
1828.....	67,475,043 87	1873.....	2,234,482,743 20
1829.....	58,421,413 67	1874.....	2,251,690,218 43
1830.....	48,565,406 50	1875.....	2,232,284,281 95
1831.....	39,123,191 68	1876.....	2,180,894,817 15
1832.....	24,322,235 18	1877.....	2,205,301,142 10
1833.....	7,001,698 83	1878.....	2,256,205,398 20
1834.....	4,780,082 08	1879.....	2,349,567,232 04
1835.....	37,513 05		

## CUSTOMS.

*Statement of expenses for collecting the revenue from customs, by districts, for the fiscal year ending June 30, 1879.*

York, Me.....	\$253 93
Bangor, Me.....	4,422 00
Frenchman's Bay, Me.....	4,560 00
Waldoborough, Me.....	6,850 00
Portland, Me.....	71,303 00
Belfast, Me.....	4,152 00
Wiscasset, Me.....	3,641 22
Machias, Me.....	2,970 00
Saco, Me.....	869 51
Passamaquoddy, Me.....	22,223 68
Bath, Me.....	4,907 05
Castine, Me.....	5,910 00
Aroostook, Me.....	7,193 34
Kennebunk, Me.....	780 00
Portsmouth, N. H.....	6,492 00
Vermont, Vt.....	62,656 81
New Bedford, Mass.....	5,656 88
Gloucester, Mass.....	13,410 00
Boston, Mass.....	592,771 00
Fall River, Mass.....	4,812 51
Marblehead, Mass.....	1,173 00
Plymouth, Mass.....	2,558 75
Barnstable, Mass.....	5,920 55
Carried forward.....	835,492 23

ught forward.....	835,492 23
ass.....	1,592 00
.....	7,391 95
Mass.....	2,852 74
ass.....	4,966 00
.....	1,700 65
I.....	20,570 00
.....	3,789 74
onn.....	1,449 31
.....	2,378 00
onn.....	16,144 00
onn.....	3,002 80
Conn.....	6,289 00
.....	2,113,642 61
N. Y.....	12,170 32
.....	20,037 14
.....	38,897 71
.....	31,895 13
Y.....	1,323 16
.....	2,578 00
Y.....	25,627 00
N. Y.....	17,653 58
.....	9,461 65
N. Y.....	43,962 22
J.....	219 00
bor, N. J.....	2,049 00
.....	4,194 00
bor, N. J.....	2,508 07
J.....	376 87
J.....	201 00
N. J.....	6,044 14
.....	4,700 31
Pa.....	311,815 26
.....	10,412 98
.....	8,023 00
.....	1,456 00
.....	2,641 47
.....	272,688 00
. C.....	3,575 00
.....	12,437 00
a.....	2,224 59
x, Va.....	850 00
.....	5,371 38
.....	457 70
a.....	2,317 00
a.....	2,507 00
st Va.....	685 05
N. C.....	13,480 99
.....	1,393 17
.....	3,766 93
C.....	2,261 00
C.....	18,511 85
.....	4,005 40
. C.....	1,096 00
.....	20,231 11
a.....	6,935 00
Ga.....	2,341 00
Fla.....	8,051 00
la.....	4,949 35
ne, Fla.....	2,922 03
.....	17,581 66
Fla.....	2,787 00
Fla.....	834 00
Fla.....	40 00
.....	27,487 87
.....	21,348 10
.....	375 00
ss.....	905 53
ried forward.....	4,043,984 75



Brought forward .....	\$4,043,984 75
Pearl River, Miss.....	4,686 00
New Orleans, La .....	260,277 65
Teché, La .....	6,993 49
Brazos Santiago, Tex.....	44,010 00
Galveston, Tex.....	33,551 84
Corpus Christi, Tex .....	18,927 68
Saluria, Tex .....	12,182 00
Paso del Norte, Tex. and New Mexico .....	16,556 47
Memphis, Tenn.....	5,002 00
Nashville, Tenn .....	734 55
Louisville, Ky.....	9,056 00
Miami, Ohio.....	4,458 48
Cuyahoga, Ohio.....	15,823 58
Sandusky, Ohio.....	2,532 48
Cincinnati, Ohio .....	25,170 00
Detroit, Mich .....	48,737 25
Michigan, Mich .....	2,619 00
Superior, Mich .....	8,852 55
Huron, Mich.....	30,578 67
Evansville, Ind .....	921 28
Cairo, Ill.....	2,108 56
Chicago, Ill .....	94,210 48
Galena, Ill .....	851 22
La Crosse, Wis.....	1,351 00
Milwaukee, Wis.....	5,497 00
Minnesota, Minn .....	7,556 20
Duluth, Minn .....	7,329 00
Burlington, Iowa.....	372 00
Dubuque, Iowa.....	362 00
Saint Louis, Mo.....	93,857 88
Montana and Idaho.....	2,103 76
Dakota, Dak.....	7,246 00
Alaska, Alaska.....	7,359 65
Puget Sound, Wash .....	15,771 42
Oregon, Oreg.....	7,320 35
Southern Oregon .....	1,634 00
Williamette, Oreg.....	22,117 14
Omaha, Neb .....	1,145 84
San Diego, Cal .....	8,548 00
San Francisco, Cal .....	327,842 22

Contingent expenses and fees in custom cases.....	\$18,076 15	5,210,239 44
Transportation.....	1,310 17	
Amount paid by disbursing agents for salaries, &c.....	153,624 88	
Miscellaneous, stationery, &c .....	94,110 88	
		267,182 08
Total net expenditures .....		5,477,421 52

*Statement of expenditures for assessing and collecting the internal revenue for the fiscal year ending June 30, 1879, embracing salaries and expenses of collectors and salaries and expenses of supervisors and subordinate officers.*

Alabama, first district.....	\$10,842 41	
second district .....	19,048 56	\$29,890 97
Arkansas .....	26,226 74	
third district .....	1,309 99	
		27,536 73
Arizona .....		5,022 07
Colorado.....		10,150 03
California, first district.....	\$40,081 33	
fourth district.....	27,384 78	
		67,466 11
Connecticut, first district .....	17,502 35	
second district .....	13,138 40	
		30,640 75
Carried forward .....		170,706 66

Amount forward .....		\$170,706 66
.....		6,008 18
.....		12,182 53
.....		11,499 80
First district .....	43,472 79	
Second district .....	26,369 49	
.....		69,842 23
.....		7,227 25
Third district .....	61,146 58	
Fourth district .....	8,741 25	
Fifth district .....	13,440 50	
Sixth district .....	20,398 01	
Seventh district .....	55,188 23	
Eighth district .....	5,611 01	
Ninth district .....	27,122 17	
Tenth district .....	22 50	
Eleventh district .....	17,456 25	
.....		208,526 50
Twelfth district .....	13,453 41	
Thirteenth district .....	32,591 87	
Fourteenth district .....	14,942 25	
Fifteenth district .....	18,602 72	
Sixteenth district .....	8,745 95	
Seventeenth district .....	7,019 37	
.....		95,355 57
Eighteenth district .....	8,669 98	
Nineteenth district .....	16,668 85	
Twentieth district .....	9,240 21	
Twenty-first district .....	7,701 55	
.....		42,280 59
.....		11,680 47
Twenty-second district .....	33,822 10	
Twenty-third district .....	79 48	
Twenty-fourth district .....	104,813 72	
Twenty-fifth district .....	44,151 35	
Twenty-sixth district .....	66,393 37	
Twenty-seventh district .....	30,609 60	
Twenty-eighth district .....	13,171 82	
.....		293,041 44
.....		29,918 27
.....		8,788 49
Twenty-ninth district .....	26,712 48	
Thirtieth district .....	27,723 38	
Thirty-first district .....	13,724 78	
.....		68,160 64
Thirty-second district .....	49,142 77	
Thirty-third district .....	16,741 13	
.....		65,883 90
.....		8,483 67
Thirty-fourth district .....	17,843 22	
Thirty-fifth district .....	9,407 60	
Thirty-sixth district .....	6,384 28	
Thirty-seventh district .....	8,322 59	
.....		41,957 69
Thirty-eighth district .....	38,079 28	
Thirty-ninth district .....	10,620 87	
Fortieth district .....	15,432 04	
Forty-first district .....	11,172 25	
Forty-second district .....	19,500 05	
.....		94,804 49
Forty-third district .....	8,498 62	
Forty-fourth district .....	8,427 33	
.....		16,925 95
.....		20,735 47
Forty-fifth district .....	40,656 67	
Forty-sixth district .....	44,529 19	
Forty-seventh district .....	45,929 50	
Forty-eighth district .....	9,294 60	
.....		1,284,009 84

Brought forward .....		\$1,284,009 84
New York—Continued.		
twelfth district .....	14,550 83	
fourteenth district .....	13,432 03	
fifteenth district .....	7,811 96	
twenty-first district .....	9,955 88	
twenty-fourth district .....	16,584 30	
twenty-sixth district .....	8,926 55	
twenty-eighth district .....	16,586 80	
thirtieth district .....	24,166 59	
		252,424 90
New Jersey, first district .....	10,592 30	
third district .....	11,400 15	
fifth district .....	25,125 25	
		47,117 70
Nevada .....		7,723 20
Nebraska .....		15,883 51
New Mexico .....		6,830 84
New Hampshire .....		10,095 03
North Carolina, second district .....	17,180 14	
fourth district .....	28,304 85	
fifth district .....	51,965 38	
sixth district .....	138,732 40	
seventh district .....	136 00	
		236,318 77
Ohio, first district .....	65,581 50	
third district .....	19,793 34	
fourth district .....	12,928 28	
sixth district .....	17,873 90	
seventh district .....	12,570 13	
tenth district .....	16,975 06	
eleventh district .....	14,090 10	
fifteenth district .....	11,902 12	
eighteenth district .....	24,718 98	
		196,433 41
Oregon .....		7,573 07
Pennsylvania, first district .....	54,412 59	
eighth district .....	18,471 34	
ninth district .....	26,552 35	
twelfth district .....	15,983 53	
fourteenth district .....	22,320 40	
sixteenth district .....	25,676 86	
nineteenth district .....	6,404 37	
twentieth district .....	9,198 62	
twenty-second district .....	49,372 39	
twenty-third district .....	17,092 74	
		245,485 19
Rhode Island .....		9,145 09
South Carolina .....		39,535 73
Tennessee, first district .....	417 86	
second district .....	16,851 51	
fourth district .....	170 80	
fifth district .....	78,600 22	
eighth district .....	9,464 55	
		105,504 94
Texas, first district .....	16,408 94	
third district .....	15,219 65	
fourth district .....	10,817 61	
		42,446 20
Utah .....		6,341 44
Vermont .....		5,630 84
Virginia, second district .....	23,396 92	
third district .....	22,818 67	
fourth district .....	19,190 79	
fifth district .....	29,243 45	
sixth district .....	42,769 04	
		137,418 87
first district .....	12,121 96	
second district .....	6,761 49	
		18,883 45
Brought forward .....		2,674,802 07

at forward .....		\$2,674,802 07
district .....	24,519 14	
d district .....	8,186 25	
district .....	11,925 32	
district .....	8,021 48	

itory .....		52,652 19
ry .....		5,735 07
		5,309 75

2,738,499 08

d by T. J. Hobbs for salaries of super- .....	666,480 66	
transportation and expresses .....	5,292 61	
telegraphing .....	1,903 12	
	115,781 09	

789,457 48

3,527,956 56

*penditures for Marine Hospital service, by districts, for the year ending June 30, 1879.*

.....	\$725 31
.....	687 56
Me.....	885 00
.....	434 75
.....	5,188 66
.....	299 00
.....	315 43
Me.....	241 50
.....	301 50
.....	942 65
.....	302 50
ss.....	1,167 00
.....	13,776 23
.....	6,522 00
.....	2,699 20
.....	110 00
.....	22 00
.....	30 00
.....	3,444 25
.....	729 70
.....	1,609 13
n.....	558 00
in.....	529 39
.....	42,165 68
Y.....	85 00
.....	820 35
.....	136 00
.....	236 50
Y.....	71 45
.....	5,669 01
.....	151 20
r, N. J.....	276 00
r, N. J.....	3,299 51
J.....	95 00
.....	295 60
.....	5,113 62
.....	15,114 84
.....	290 00
.....	200 75
.....	19,611 25
.....	7,311 61
.....	11,017 09
.....	1,801 25
va.....	173 50
.....	896 16

156,352 13

Brought forward .....	\$156,352 13
Yorktown, Va .....	32 10
Wheeling, W. Va .....	438 00
Wilmington, N. C .....	1,707 38
Pamlico, N. C .....	987 67
Albemarle, N. C .....	677 00
Beaufort, N. C .....	34 08
Charleston, S. C .....	3,993 25
Beaufort, S. C .....	18 45
Georgetown, S. C .....	23 60
Savannah, Ga. ....	3,855 65
Brunswick, Ga. ....	7 00
Saint Mary's, Ga. ....	32 00
Saint Mark's, Fla. ....	247 20
Fernandina, Fla. ....	305 00
Saint John's, Fla. ....	1,271 25
Pensacola, Fla. ....	4,811 00
Apalachicola, Fla. ....	1,253 82
Key West, Fla. ....	4,621 57
Mobile, Ala. ....	6,137 95
Vicksburg, Miss. ....	3,921 30
Pearl River, Miss. ....	112 00
New Orleans, La. ....	26,115 94
Teche, La. ....	15 00
Brazos, Tex. ....	320 00
Corpus Christi, Tex. ....	654 50
Saluria, Tex. ....	99 75
Galveston, Tex. ....	8,822 32
Louisville, Ky. ....	11,255 92
Miami, Ohio. ....	2,917 90
Cuyahoga, Ohio. ....	4,605 53
Sandusky, Ohio. ....	19 00
Cincinnati, Ohio. ....	8,909 96
Memphis, Tenn. ....	3,208 00
Nashville, Tenn. ....	1,867 13
Michigan, Mich. ....	71 00
Detroit, Mich. ....	7,003 29
Superior, Mich. ....	410 77
Huron, Mich. ....	39 70
Evansville, Ind. ....	4,842 42
Cairo, Ills. ....	7,327 76
Chicago, Ills. ....	19,207 20
La Crosse, Wis. ....	1,688 07
Milwaukee, Wis. ....	4,207 19
Minnesota, Minn. ....	3,436 10
Duluth, Minn. ....	282 35
Dubuque, Iowa. ....	2,413 59
Saint Louis, Mo. ....	12,755 27
Puget Sound, W. T. ....	6,638 23
Southern Oregon. ....	185 50
Willamette, Oreg. ....	3,529 00
San Francisco, Cal. ....	22,023 42
Transportation .....	74 62
Disbursing agent. ....	18,893 24
Miscellaneous .....	484 94

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 375,164 01

Statement showing the number and class of vessels built, and the tonnage thereof, in the several States and Territories in the United States, from 1815 to 1879, inclusive.

Year.	Class of vessels.					Total number of vessels built.	Total tonnage.
	Ships and barka.	Brigs.	Schooners.	Sloops, canal-boats, barges.	Steamers.		
1815	136	224	681	274	.....	1,315	Tons. 95th.
1816	76	133	781	424	.....	1,414	154,624 29
1817	94	86	559	394	.....	1,073	131,667 86
1818	53	85	428	332	.....	898	86,393 37
1819	53	82	473	242	.....	850	82,421 20
1820	21	60	301	152	.....	534	79,817 86
1821	43	89	248	127	.....	507	47,784 01
1822	64	131	260	168	.....	623	55,856 01
1823	55	127	260	165	15	622	75,346 93
1824	56	156	377	166	26	781	75,007 57
1825	56	197	538	168	35	994	90,939 00
1826	71	187	482	227	45	1,012	114,907 25
1827	58	136	364	141	38	737	126,438 35
1828	73	108	474	197	33	885	104,342 67
1829	44	68	485	145	43	785	98,375 58
1830	25	56	403	116	37	637	77,098 65
1831	72	95	416	94	34	711	58,084 24
1832	132	143	568	122	100	1,065	85,962 68
1833	144	169	625	185	65	1,188	144,539 16
1834	98	94	497	180	88	957	161,626 36
1835 (9 months)	26	50	301	100	30	506	118,336 37
1836	93	65	444	164	124	890	46,238 52
1837	67	72	507	168	135	949	113,627 49
1838	66	79	510	153	90	898	122,987 22
1839	83	89	439	122	125	858	113,135 44
1840	97	109	378	224	63	871	120,988 34
1841	114	101	311	157	78	761	118,309 23
1842	116	91	273	404	137	1,021	118,893 71
1843 (9 months)	58	34	138	173	79	482	129,083 64
1844	73	47	204	279	163	766	63,617 77
1845	124	87	322	342	163	1,038	103,537 29
1846	100	164	576	355	225	1,430	146,018 02
1847	151	168	689	392	198	1,598	188,203 93
1848	254	174	701	547	175	1,851	243,732 67
1849	198	148	623	370	208	1,547	318,075 54
1850	247	117	547	290	159	1,360	256,577 47
1851	211	65	522	326	233	1,357	272,218 54
1852	265	79	584	267	259	1,444	298,203 60
1853	269	95	681	394	271	1,710	351,493 41
1854	334	112	661	386	281	1,774	425,572 49
1855	381	126	605	669	243	2,024	535,636 01
1856	306	103	594	479	221	2,024	583,450 94
1857	251	58	504	358	263	1,703	469,393 73
1858	122	46	431	400	226	1,434	378,804 70
1859	89	28	297	284	172	1,225	242,286 60
1860	110	36	372	289	264	1,071	156,602 33
1861	110	38	360	371	264	1,143	212,892 48
1862	60	17	207	397	183	864	233,194 35
1863	97	34	212	1,113	367	1,823	175,075 84
1864	112	45	322	1,389	498	2,366	310,884 34
1865	109	46	369	853	411	1,788	415,740 64
1866	96	61	457	926	348	1,888	383,805 60
1867	95	70	517	657	180	1,888	336,146 56
1868	80	48	590	848	236	1,519	803,528 56
1869	91	36	506	816	277	1,802	285,364 73
1870	73	27	519	709	290	1,726	275,230 05
1871	40	14	498	901	302	1,618	276,953 31
1872	15	10	426	900	292	1,755	273,226 51
1873	28	9	611	1,043	402	1,643	299,062 22
1874	71	22	655	995	404	2,271	359,045 76
1875	114	22	502	340	323	2,147	432,725 17
1876	76	6	434	269	338	1,301	297,638 79
1877	71	4	337	352	265	1,112	205,585 63
1878	81	7	279	557	334	1,029	176,591 96
1879	37	10	256	494	335	1,258	235,503 57
						1,132	193,030 69

\* New measurement from 1866.



REPORT OF SUPERINTENDENT OF THE UNITED STATES  
COAST SURVEY.OFFICE OF THE COAST AND GEODETIC SURVEY,  
*Washington, October 27, 1879.*

SIR: I have the honor to present the following synopsis showing progress in the fiscal year ending June 30, 1879, in prosecuting the coast and geodetic survey of the United States. Details of the work will be given in my final report in December next. The operations of the year include hydrography of the coast of Maine from Petit Manan Light southward and westward to completed limits, and soundings in the eastern approaches to Mount Desert Island; drawings of prominent features of that island; soundings in Frenchman's Bay, near the Porcupine Islands; topography of those islands and of the shores of Skilling River, and of the shores of Union River Bay, near Ellsworth, Me.; topographical surveys of Long Island and Bartlett's Island; soundings in the approaches to Deer Isle, including parts of Jericho Bay and Placentia Bay, and in the approaches to Isle au Haut, developing there numerous ledges and also a ledge in Muscongus Bay; tidal observations at North Haven, in Penobscot Bay; geodetic observations at Gunstock Mount, Starr King Mount, and Mount Monadnock, in New Hampshire; light-houses at Portsmouth, N. H., and at Newburyport and Cape Ann, Mass., determined in position; reconnaissance for geodetic stations in Vermont; hydrography of the entrance and bar of Merrimac River, Massachusetts; inspection and verification of the harbor commissioner's survey of the upper harbor of Boston; sea currents observed and recorded at stations in the Gulf of Maine; examination for positions of aids to navigation along the coast of Massachusetts and Rhode Island; tidal observations in Buzzard's Bay and at Providence, R. I.; geodetic observations at Mount Prospect, N. Y.; hydrography of the vicinity of Block Island, including development of Southwest Ledge; positions examined of the aids to navigation along the coast of Connecticut and in Long Island Sound and Hudson River; the eastern part of Jamaica Bay surveyed and sounded; tidal observations at Sandy Hook, N. J., and at Governor's Island, New York Harbor; topography of the shores of the Hudson, near Peekskill; examination of the ground marks at triangulation points on the coast of New Jersey; geodetic observations at Pickles Mount and at Mount Horeb, in New Jersey; triangulation, topography, and hydrography, with special observations on the tides and currents of Delaware River, at Philadelphia, for the board of trade; hydrographic survey of the Delaware from Marcus Hook to New Castle, for the Light-House Board; geodetic observations connecting stations in Eastern Pennsylvania with points in Maryland; pendulum observations at stations in Pennsylvania; astronomical observations at Washington for determining the longitude of southern stations; magnetic declination, dip, and intensity determined as usual at Washington, D. C.; investigation of the oyster reefs in Tangier Sound, Pocomoke Sound, and James River, Virginia; tidal observations at Old Point Comfort; detailed survey of the shores of James River continued in the vicinity of Richmond, Va.; geodetic observations at stations in West Virginia; geodetic level determined at points between Hagerstown, Md., and Athens, in Ohio; positions determined of life-saving stations on the coast of Virginia and North Carolina, for entry on engraved charts; in Albemarle and Pamlico Sounds, compilation of notes for the Coast Pilot; development of a harbor of refuge inside of

Cape Lookout; coast of North Carolina sounded from Barren Inlet southward and westward to Cape Fear; topography of Smith's Island in the vicinity of that cape; longitude determined at a station in Statesville, N. C.; hydrography of the coast of South Carolina from Murrell's Inlet southward to the approaches of Winyah Bay, and sounding of the Sampit River above Georgetown, S. C.; topography of the shores of parts of Stono River and Wappo Creek near Charleston, S. C.; longitude determined at a station in Atlanta, Ga.; tidal observations at Fernandina, Fla.; triangulation and topography of Indian River, Florida, extended southward to Malabar Point, including the adjacent beach of the Atlantic; triangulation of the Gulf coast between Charlotte Harbor and Sarasota Bay; inshore hydrography of that vicinity; magnetic elements determined at Fernandina and Key West, Fla.; at Nassau (New Providence); at South Bemini; Salt Key Bank; Matanzas, Bahia Honda, Havana, and Cape San Antonio (Cuba); at Belize in British Honduras; and at Cozumel and Myeres, off Yucatan; geodetic observations at stations in Northern Alabama; currents observed and recorded at stations in the Gulf of Mexico off the mouth of the Mississippi; at New Orleans, records of the water-level; triangulation of the Mississippi between Donaldsonville and Iberville, between Natchez and Grand Gulf, between Vicksburg and Milliken's Bend, and from Bennett's Landing to Memphis; hydrography of the Mississippi River between Grand View Reach and Point Houmas; soundings in the mouths of Red River and the Atchafalaya, and also of the Bonnet Carré, Morganzia, Glasecock, and Diamond Island Crevasse; inshore hydrography of the coast of Texas abreast of Matagorda peninsula; triangulation of Laguna Madre near the Rio Grande boundary; deep-sea soundings, serial temperature observations, and dredgings in the waters of the Caribbean Sea, and in passages between the Windward Islands; magnetic declination, dip, and intensity determined at San Antonio, Fort Worth, and Sherman, in Texas, and at Atoka and Enfauila, in Indian Territory.

On the Pacific coast of the United States the work of the year includes the geodetic connection, giving true positions of the Santa Barbara Islands, off the coast of California; and the detailed survey of Santa Catalina Island and San Clemente Island; also the hydrography of the approaches to those islands; inshore hydrography of the coast from Newport Bay to Point Vicente, and soundings in the southern approach to Santa Barbara channel; coast triangulation from Point Arguello northward to Point Sal, and topography of the coast of California in the vicinity of Point Purissima; hydrography of part of Suisun Bay and part of San Pablo Bay; soundings at the mouths of the Sacramento and San Joaquin Rivers; tidal observations at Saucelito, in San Francisco Bay; geodetic observations at Mount Lola, Cal.; detailed survey of the coast from Fisherman's Bay northward and westward to Haven's anchorage; extension northward of the main triangulation of the coast of California to the vicinity of Point Cabrillo; tidal records from the self-registering gauge at Honolulu, Sandwich Islands; triangulation of Columbia River, Oregon, extended upward to Willamette Slough; triangulation across the waters of Washington Sound in the vicinity of Point Partridge, Wash. Ter.; hydrography of the southern part of Puget Sound, from Battery Point to Henderson's Inlet; survey of the shores of Hood's Canal between Point Gamble and Hazel Point; triangulation of Case's Inlet, Pickering Passage, Peale's Passage, Eld Inlet, and Totten's Inlet, connecting with Puget Sound; and topography of the shores of Carr's Inlet, Wash. Ter. Further material has been compiled for the Coast Pilot of Alaska, and *illustrative of the meteorology of that Territory.*



In localities between the Atlantic coast and the Pacific coast, geodetic work has been advanced by marking a base line near Louisville, Ky., and selecting adjacent points for triangulation; by geodetic observations near Lebanon, in Tennessee; selection of geodetic points between Athens and Columbus, Ohio, and in Indiana between Indianapolis and New Albany; in Illinois points have been selected to connect with the base line on American Bottom, and observations were recorded at Springfield for the magnetic declination, dip, and intensity. Further westward the operations of the year include magnetic observations at Madison, Wis., and geodetic work between that city and the Mississippi River; also in Missouri beyond completed stations near the Gasconade River; magnetic observations at Great Bend, Sargent, Humboldt, Emporia, and Dodge City, in Kansas; geodetic observations in Nevada and in Colorado; magnetic observations at Denver and North Pueblo, Fort Lyon, Colorado Springs, and Greeley, in Colorado; and at Salt Lake City, Castle Rock, and Ogden, in Utah; at Laramie City, Rock Creek, Creston, Point of Rocks, Cheyenne, Fort Steele, Green River, and Carter Station, in Wyoming Territory.

Office operations of the year include the reduction and discussion of all the field observations, preparation for issue of the records and results; the drawing of hydrographic charts from the original note-books, and of topographical and hydrographic maps on the several scales of reduction from originals, for publication; engraving, electrotyping, and printing of the same; and repairs of instruments used in the survey.

Tide tables of the principal ports of the United States for the year 1880 have been published; drawings for fifty-nine charts have been in progress, and of these twenty-eight were completed within the year, nine of which were photolithographed. In engraving, one hundred and forty-five plates have received additions, twelve chart-plates have been completed, and engraving is in progress on ten others begun within the year.

An aggregate of twenty-three thousand two hundred and thirteen copies of charts has been issued, and returns show by three-fold increase in sales a large demand for them; nine hundred and sixty-three copies of the annual reports have been distributed; calls have been met, as heretofore, for information relating to local topography and hydrography, tides, magnetic variations, geographical positions, heights, distances, directions, and other particulars contained in the office records.

The second volume of the Atlantic Coast Pilot (for navigation between Boston and New York) has been published, and also a second edition of part of the Coast Pilot for the Gulf of Maine. The third volume, nearly ready for the printer, will complete descriptions of the coast and sailing directions for navigating between Passamaquoddy Bay and Chesapeake entrance, and notes are now in hand for a fourth volume, to include the coast south of Cape Henry.

Respectfully submitted.

C. P. PATTERSON,

*Superintendent U. S. Coast and Geodetic Survey.*

Hon. JOHN SHERMAN,

*Secretary of the Treasury.*

# REPORT OF THE SECRETARY OF WAR.

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WAR DEPARTMENT, *November 19, 1879.*

MR. PRESIDENT: I have the honor, in accordance with the requirement of the statute, to submit the annual report of the operations of this department for the past year.

## THE ARMY.

The report of the General of the Army gives in detail the strength of the several branches of the service, and shows the aggregate, as exhibited in the latest returns, to be 2,127 officers, 24,262 men, and 388 officers retired. A portion of this force, however, being necessarily employed in detached or special service, constitutes no part of the force available for actual operations in the field.

The enlisted men of the Signal Corps, Engineer and Ordnance Corps, Ordnance Sergeants, Commissary Sergeants and Hospital Stewards, the prison guard at Fort Leavenworth, and the recruiting detachments amount in the aggregate to 3,463 men, and are employed in the performance of important duties connected with the military establishments, but these duties bring but few of them into active service in the field. The statute now authorizes a total force of twenty-five thousand men, not including the Signal Corps, which has by law four hundred and fifty-six men. I join most heartily with the General of the Army in recommending that the effective force of the Army available for field duty be raised to twenty-five thousand men, exclusive of the above-named detachments.

I have had occasion in previous reports to express the opinion that a due regard for the safety of settlers upon our frontiers, the guarding and preservation of our vast and valuable military stores and property, the proper management and control of the Indian tribes, and the defense of our extensive border lines, would justify, if they do not imperatively require, a much greater increase of the effective force of the Army than is here suggested. Certainly Congress should not hesitate to authorize the enlistment of the full number of 25,000 men for the line of the Army, exclusive of the number required for detached duty. It is undeniable that most if not all the disasters attending Indian hostilities are the result of inadequacy of force on our part. The wily Indian seldom, if ever, strikes a powerful foe. His policy is to take

advantage of our weak points on the frontier to inflict heavy losses upon us. The records of this department show that since the close of the war of the rebellion fifty-five officers of the Army have been killed in Indian warfare, and a corresponding number wounded, besides a proportionate number of men killed and wounded. Among the list of killed will be found the names of such valuable officers as Canby, Custer, and Thornburgh.

#### INDIAN HOSTILITIES.

It was hoped that the last year would prove one of peace with the Indians, but this hope was disappointed by the hostilities of the Utes in Colorado and the Apaches in New Mexico, a full and particular account of which will be found in the report of the General of the Army. In the efforts for the suppression of these outbreaks the military authorities, including the officers and men engaged, have acted with great promptness and vigor. The conduct of Captain Paine, Company F, Fifth Cavalry, and of Captain Dodge, Company D, Ninth Cavalry, as shown in official reports, is worthy of high commendation.

The massacre of Agent Meeker and others at White River Agency; the killing of Lieutenant Weir, of the ordnance, a gallant young officer who had volunteered for duty with the expedition, and the fall of the lamented and gallant Major Thornburgh, and others of his command, are events greatly to be deplored; and in my judgment the government should persist in its demand for the surrender for trial and punishment of all Indians guilty of murder in connection with these affairs, and should visit upon the guilty the full penalty of their offenses. If Indians, who subsist upon the bounty of the government, can commit with impunity crimes such as these, and if the United States fails to punish them, the savages will find in these facts encouragement to repeat the outrages when opportunity and inclination shall prompt them to do so, while swift punishment in the present cases will teach these people, who understand little besides force, a wholesome lesson.

#### ABANDONED MILITARY POSTS.

This department has charge of a large number of abandoned military reservations. They have been rendered useless for military purposes by the advance of civilization and settlement, and are now simply a source of expense to the United States. Some of them are surrounded by settlements, and are, therefore, much more valuable than ordinary public lands. In some instances it would be more economical to sell the land, with the improvements, to the highest bidder; in other cases it might be desirable to sell the buildings, with a view to their removal, and then turn the land over to the Interior Department, to become a part of the public domain. In still other cases it might be desirable to remove the material now in the improvements to other posts which are still needed for military purposes, and where it could be utilized. It is certainly very desirable that authority be conferred upon the Secretary of War, in some manner consistent with the interest of the government, to dis-



pose of all the posts and reservations which are not now in use and not likely to be required hereafter for military purposes. I have, during the past two years, caused a number of these posts to be inspected, and reports, giving full particulars, are on file in the department, and can be furnished to Congress at any time when required. I recommend that Congress be asked to provide by law for the disposition of this property. In case of a sale, the law should provide for a careful appraisalment and for ample safeguards against a sacrifice of the property. Attention is invited to the remarks of the General of the Army upon this subject, to be found in his annual report herewith.

#### EXPENDITURES, APPROPRIATIONS, AND ESTIMATES.

The actual expenditures of the War Department for the fiscal year ending June 30, 1879, were \$42,653,723.62.

The appropriations available for the service of the fiscal year ending June 30, 1878, aggregated \$45,076,702.95; those for 1879 were \$53,016,040.96, and those for the current fiscal year amounted to \$46,269,821.94.

The estimates for the service of the fiscal year ending June 30, 1881, are \$40,380,428.93, to which amount they have been reduced from \$54,306,643.14, for which they were originally submitted to me. The reductions, in detail, may be found in the Book of Estimates, except in cases where unfavorable considerations have caused entire items to be finally omitted, and this exception applies principally to the

*Civil establishment.*—This establishment includes salaries and contingent expenses of the permanent departmental offices, and these estimates amount to \$1,159,460. The force of the War Department and its bureaus was reorganized by an act of June 20, 1874, and placed on a basis, as to numbers, grades, and compensation, which seemed to be satisfactory in the transaction of public business, until that basis was materially changed by legislative reduction in 1876, and was thereafter considered by Congress as subject to further decrease. The officials responsible to the public for the prompt dispatch of business through the employment of this reduced force annually showed cause in their reports for fiscal years from 1877 to 1880 for a renewal of the number of employés on the basis of 1874, and they made their estimates accordingly.

In my last annual report I submitted my views in regard to the necessity for increased force, which necessity continues to exist. Congress having acted unfavorably to an increase, however, I have deemed it proper to restrict these estimates to the number of employés authorized by appropriations for the current fiscal year. In this connection I have to suggest that the clerical force allowed to this office is not sufficient to satisfactorily dispatch current business, and that some of the chiefs of bureaus report that the force estimated for by them, on the basis of appropriations, is not adequate to the clerical needs of their offices.

*The military establishment* is estimated for on the basis of 25,450 enlisted men, the *Signal Corps* being by law allowed 450 men not to be

included in the 25,000. Under this head the estimates for the current fiscal year were \$29,335,727.33; the appropriations to meet the same were \$26,978,847.33, and the present estimates are for \$29,319,794.78. The principal differences between the estimates and the appropriations are on account of the item for pay, &c., of the Army, which is made up of estimates based on arithmetical calculations, and on items for the Ordnance Department which relate to timely provisions for the public defense in any emergency that may arise.

*The public works.*—The estimates, as reduced, are \$7,557,034.42, which amount is \$396,043.34 less than the estimates for 1879, \$113,946.88 less than those for 1880, and \$3,237,460.19 less than the appropriations for 1880, which were \$10,794,494.61. The views expressed under this head in my last annual report are here renewed, as best explanatory to the reduction of these estimates, which, as transmitted to me, aggregated \$20,182,873.42. About seventeen-twentieths of this amount are for "the continuation of works once commenced under legal authority, and remaining unfinished for want of funds," and are annually submitted to Congress in accordance with law. (See sec. 231 R. S.)

The amounts appropriated for "fortifications and other works of defense" during the last five years have been insufficient to preserve all such government property from waste. This fact *per se* accounts for the annual increase in the amounts suggested for these works by the Chief of Engineers. Under this title the estimates for 1880, which were \$3,188,400, were reduced by me to \$1,000,000, and were favorably considered in Congressional appropriations for \$150,000; and the present estimates, rendered in detail, for \$4,028,500, have been reduced in the aggregate to \$1,000,000, which amount could be wisely and properly applied to the preservation and care of these works.

*The estimates for rivers and harbors* rendered by items for \$14,326,650, I have reduced in the aggregate to \$5,015,000, which was the total of the amount appropriated for the fiscal year 1877, and which seems to have been sufficient for the promotion of the general commerce of the country during that time. In relation to the comparative differences between the amounts of estimates and appropriations, it seems to me that some embarrassments must always attend the discretionary preparation and consideration of these estimates, owing to the uncertainty which, perchance, must mark their future credit by Congress. Last year, for example, my estimates for fortifications, as has already been stated, were \$1,000,000, and the appropriations granted therefor were only \$150,000, while at the same time, the reverse of this principle or policy appeared, when on my estimates for rivers and harbors for \$5,015,000, the appropriations granted therefor were \$9,752,494.61.

*The miscellaneous estimates* are \$2,344,139.73, of which amount about one-fourth appertains annually to the departmental collection and diffusion of valuable official data, such as the observation and report of storms through the Signal Service, the compilation and publication of official records of the war of the rebellion, and the like; and the re-



maining portion (which is over one million five hundred thousand dollars) is made up of items wholly relative to certain moral obligations of the government, such as the support of the National Home for Disabled Volunteer Soldiers, the furnishing of artificial limbs and other appliances to disabled soldiers, and the care of National Cemeteries.

I have not reduced any of the estimates under this head below the amounts for which they were originally submitted to me.

The aggregate of the estimates for the next fiscal year is \$2,273,294.69 less than the amount of actual expenditures of 1879; \$5,889,393.01 less than the appropriations available for the service of the fiscal year 1880, and is \$7,289.40 less than the estimates for 1880, which were for a "less sum of money than any annual estimates rendered to Congress from this department for a period of at least eleven years," as shown in my last annual report.

#### UNION AND CONFEDERATE WAR RECORDS.

The preparation of these records for publication is progressing satisfactorily under the efficient management of Col. R. N. Scott, of the Army.

The War Department agent for collecting such Confederate records as may be placed, by gift or loan, at the disposal of the government, has been very successful.

The Southern Historical Society has placed its collection at the service of the department, and valuable documents have been furnished by Generals Johnston, Pemberton, Wheeler, Jones, Ruggles, and others. In fact, there is a general disposition on the part of ex-Confederate officers to contribute material to the official History of the War.

In a few instances records of the Confederate armies are held for sale, but Colonel Scott renews his objection to the purchase of such documents; and in his views I concur.

Attention is invited to the fact that as yet no provision has been made for publishing any of the records. An appropriation for the composition, stereotyping, and printing of proof copies of the records for 1861, is recommended.

Extra compensation is asked for two of the Adjutant-General's clerks specially connected with the work of the War Records Office; and I recommend that this be granted.

#### ADJUTANT-GENERAL'S DEPARTMENT.

The Adjutant-General asks for an increase of his clerical force, the work in his office having fallen so far behindhand that additional clerks will be necessary to bring it up. This increase of business is largely owing to the passage of the act of Congress granting arrears of pensions. I invite attention to the remarks of the Adjutant-General upon this subject, and to his recommendation, which is concurred in.

The work of codifying the Army Regulations and General Orders, under the provisions of section 2 of the act of June 23, 1879, was con-

fided by me to the Adjutant-General, and has been prosecuted without intermission since the passage of the act, and is in an advanced state of completion.

The existing system of recruiting continues to be productive of good results. Recent inspections show that the character of the men composing the rank and file is high.

#### BUREAU OF MILITARY JUSTICE.

The Judge-Advocate-General reports, among other items of business, the receipt and review at his bureau of 1,673 records of general courts-martial, and the furnishing to the Secretary of War of 898 reports and opinions on questions of law.

He reports the convictions for desertion as increased during the past year by 24, and expresses the opinion that the two principal or most conspicuous causes of desertion in the Army are: 1. Drunkenness, or rather indiffgence in intoxicating liquors; 2. Oppressive or injudicious treatment of soldiers by non-commissioned officers, and especially first sergeants of companies invested with an excess of authority.

I concur with the Judge-Advocate-General in the recommendation that Congress, in making appropriations for his branch of the service, will appropriate a reasonable sum for the purchase of suitable law libraries for the use of the judge-advocates at the headquarters of the military geographical departments, the same being urgently needed.

He also recommends that the legislation heretofore initiated in the Senate for making *gambling* in the Army a punishable offense be renewed, and the bill heretofore proposed for the purpose, or some similar provision, be enacted by Congress.

He further indicates defects in the 72d and 104th Articles of War as embarrassing to the administration of military justice, and recommends that they be removed by legislation.

The Judge-Advocate-General renews his former recommendations for some declaratory legislation in reference to the 103d Article of War, the military statute of limitation. In my last annual report I invited attention to this important topic, and expressed the hope that an existing diversity of opinion and practice might be settled by some judicious legislation. The 103d Article of War provides that no person shall be liable to be tried and punished by a general court-martial for any offense which appears to have been committed more than two years before the issuing of the order for such trial, *unless, by reason of having absented himself or of some other manifest impediment, he shall not have been amenable to justice within that period.* Until recently, these saving words of the statute had been generally understood in the Army to be of equivalent effect to the terms "fleeing from justice," as used in section 1045, Revised Statutes, to defeat the operation of the statute of limitation in the Federal courts, and which long ago received judicial definition. But late opinions of the Attorney-General have held that mere absence from the Army without leave does not necessarily amount, in law, to the im-

pediment to arrest and trial within the meaning of the Article of War, but that in every case it was a question of fact for the court whether, by reason of such absence, a deserter had or not been amenable to justice.

In view of the standing reward offered for the apprehension of deserters and the duty incumbent by law upon public officers to effect their arrest when practicable, courts-martial are usually inclined to consider, in the absence of evidence that a deserter's whereabouts were known to the military authorities, that while absent he was *not* amenable to justice. Nevertheless, the controversy that is continued on this subject cannot fail to injuriously affect the discipline of the military service by tending to extenuate in the minds of enlisted men the responsibility for this grave crime and leading those disposed to desert to believe that by hiding for two years they may escape punishment. Nor is the question confined to deserters alone, since it might equally arise in the case of a mutineer or other offender against the Articles of War, who might escape and evade arrest by secreting himself for more than two years.

As a settlement of the whole question upon a satisfactory basis I would advise, in conformity with the views of the Judge-Advocate-General, that some certain term of amenability be fixed in the case of deserters. This term, however, ought not, in my opinion, to be too short, lest a hope of early immunity should be held out to encourage a crime already too prevalent; nor should the law to be enacted be complicated by any proviso in reference to the offenders having been within or without the territorial domain of the United States, which, as a rule, it would be wholly impossible for the government to ascertain or prove.

#### QUARTERMASTER'S DEPARTMENT.

The Quartermaster-General reports that the expenditures of the Quartermaster's Department during the fiscal year have been \$10,758,001.11; that \$12,135.50 was transferred from the appropriation for support of the Military Prison to the Commissary Department on account of subsistence of prisoners; that \$198,108.26 has been covered into the surplus fund in the Treasury, and that the balance to credit of Quartermaster's Department appropriation in Treasury on 30th June, 1879, was \$1,219,701.15.

The expenditures of the department have decreased. In 1874 they were \$14,558,317.11; in 1879 they were \$10,758,001.11.

He recommends the enlistment of post quartermaster's sergeants, much needed to give personal care to property and supplies, and preserve knowledge of business affairs and of condition of buildings and property at posts, now lost by frequent changes of station of the lieutenants, who act throughout the Army as post quartermasters, and who, being attached to companies, are replaced every time a company is detached and ordered to a new post. He also recommends that these lieutenants, when their detail as A. A. Q. M. has been approved by the Secretary of War, *be allowed ten dollars per month extra pay as com-*



pensation for responsibility and risk of loss involved in the care of money and supplies. In these recommendations I fully concur.

The department moved during the year 59,177 persons, 4,921 beasts, and 120,440 tons of supplies from the settlements to the military posts, many of which are in the far interior and at the end of long lines of communication. The cost of this transportation was \$2,215,968.05.

The embarrassment and expenditure arising in the legislation against the land-grant railroads still continues, and the repeal of this special legislation, which would leave these questions and claims to be settled on the principles of law and equity decided to be applicable by the Supreme Court, is again recommended by the Quartermaster-General and concurred in by me.

The Pacific Railroads transported 10,486 persons, 1,766 beasts, and 52,147,582 pounds of supplies during the year. At their regular tariff rates the value of this service was \$721,943.40. The total value of the military transportation over these roads to 30th June, 1879, is \$10,362,331.99.

The railroads who purchased material from the Quartermaster's Department, under executive orders of October, 1865, still owed the United States, on the 1st of July last, the sum of \$1,892,677.11. Of this amount the Nashville and Northwestern Railroad, which is insolvent, owes \$908,550.27, which amount it is not supposed will ever be paid.

*Cavalry and artillery horses.*—One thousand six hundred and eighty-six horses were bought at average cost of \$92.62. Last year the average price paid was \$117.23, or 20 per cent. higher. One thousand four hundred and eighty-nine mules were purchased at average price of \$105.41, which is 20 per cent. less than the price of last year, which was \$130.15.

Sales of disabled and unserviceable animals realized the sum of \$75,193.55, which has been deposited in Treasury to credit of miscellaneous receipts.

There were in service on June 30th 10,990 horses and 10,032 mules, which, with an Army of 25,000 men, is about 100 beasts to 120 men.

Our Army is more thoroughly provided with transportation than most others. It is always on a war footing, and when a savage tribe attacks a party and commits a massacre the relieving troops move, as in a recent instance, on a few hours' notice, a thousand miles from their cantonments and begin a march of 180 miles, through a desert, mountain country, the instant they reach the base of supplies on the Pacific Railroad, and complete it in less than three days and rescue the survivors.

The Quartermaster-General calls attention to the inequality of recent legislation on the subject of officers' horses and the hardship imposed on officers in some districts by abolishing the issues of fuel. Officers east of the Mississippi suffer from the first, those in the far western wilderness from the second.

*Claims under act of July 4, 1864.*—In the investigation and examina-

tion of claims for compensation for quartermaster's stores taken by the Army, under the act of July 4, 1864, the sum of \$122,825.52 has been expended during the year; 2,460 claims for nearly two millions of dollars have been investigated, and on these the investigating agents recommended allowance of one-fourth of a million; 3,796 claims have been considered during the year, amounting to \$3,180,658.55; 1,667 have been reported to the Treasury, with recommendation for allowances amounting to \$121,568.26. Under this law 40,748 claims have been filed for \$30,557,014.99—9,905 have been reported on favorably for allowance of \$4,143,932.95; 19,194 have been rejected, amounting to \$17,332,995.60; 11,649 remain, asking for \$5,523,293.55.

The Quartermaster-General again calls attention to the vast amount of money accounts, vouchers, claims, and other valuable records exposed in his office, a very dangerous building, to risk of total destruction by fire, and renews his recommendation for the construction of a simple and cheap and perfectly fire-proof building of brick near the State, War, and Navy Departments, for safe storage of such records from these branches of the government. He estimates the cost of nearly 2,000,000 of cubic feet of safe fire-proof storage at \$200,000, and submits again the plan and estimates to which he called attention last year. I again recommend this project to favorable consideration as both judicious and economical.

New military posts have been under construction on the Yellowstone or Milk River, near the northern boundary-line, on the line of communication of the renegade Indians who fled into British America; on Lake Chelan, in Northern Washington Territory, and on the north fork of the Canadian River, in the Indian Territory; also on Bear Butte Creek, in the Black Hills, Dakota. Other military posts were authorized by law at El Paso, Texas; at Pagosa Springs, Colorado, and on the Niobrara River, in Nebraska.

*Sites of military posts in Texas.*—The remarks on this subject of last annual report are referred to. No change in the situation has occurred; the United States is still a tenant, leasing from year to year the sites of most of these posts, and subject to the will of the owners as to the rent to be paid from year to year. Without full authority and discretion in these purchases, which the department does not possess, the question cannot be settled properly. This subject requires the attention and action of Congress.

*Transfer of military headquarters to military posts.*—The law which required this transfer has been conditionally repealed, but the attempt to execute it has involved the War Department in expenditure for the—

Division of the Atlantic and Department of the East .....	\$184,000
Department of Dakota.....	299,000
Department of the Platte.....	148,000
Department of Texas.....	116,000
Division of Pacific and Department of California .....	54,000

Total ..... 801,000

The Quartermaster's Depot at San Francisco has, at the request of the business men of the Pacific coast, been added to the list of general depots of the Quartermaster's Department, reserving, however, to the general commanding the Division of the Pacific authority in regard to supplies in the depot for his Division.

Congress, by the law of March 3, 1879, required the manufacture of Army supplies, when economical, to be established at the military prison at Fort Leavenworth. The boots and shoes and chairs for the Army are being made there by convict labor. Measures are instituted to begin the manufacture of harness at the prison, and the question of transferring to the prison the manufacture of wagons, ambulances, and other vehicles is under consideration.

*Military cemeteries.*—The military cemeteries, eighty in number, are in good order, and improve in beauty as cultivation improves. I caused the materials of the ancient portico of the old War Department, on its demolition to make room for the new building, to be transferred to the Arlington Cemetery, where the old columns and entablature have been used in constructing two handsome and appropriate entrances to that cemetery. It is suggested by the Quartermaster-General that the cemetery affords ample space, without encroaching on the ground occupied by the soldiers of the war, to be used as a National Government Cemetery for the interment of members of Congress and officers of all services of the United States who may die at the Capital or whose friends may desire for them such a place of sepulture. This subject is worthy of consideration.

A small appropriation is needed for improving the road between the Capitol and Arlington Cemetery, and also one to complete the estimate for construction of a road, already more than half completed by order of Congress, between Vicksburg and the Vicksburg Military Cemetery.

The work of marking the graves in military cemeteries with marble and granite head-stones is practically completed. Contracts have been let for placing marble head-stones on the graves of soldiers who died during the war and were buried in private village and city cemeteries, and whose friends have not been able to do this honor to their memory. The work can hardly be begun before next spring.

#### SUBSISTENCE DEPARTMENT.

The Commissary-General recommends that the appropriation for subsistence of the Army be made available from the passage of the act making it, in which recommendation I concur.

Supplies, as a rule, are purchased from producers and manufacturers or importers nearest points of consumption, when consistent with a due regard to economy and the procurement of stores of a proper quality.

The purchases of flour in accordance with above rule, the increase in amount, and the improvement of quality produced near posts in Texas, Missouri, Nebraska, New Mexico, Colorado, Wyoming, and Arizona are referred to.

Attention is invited to the fact that the Subsistence Department has not been reimbursed for the value of a large quantity of supplies issued to Indians and transferred to Indian agents, and the Commissary-General states that in his estimates for prisoners of war for the next fiscal year he has included only Indians for the subsistence of whom no other appropriation is made, being of the opinion that Congress does not intend to make double appropriations for the subsistence of Indians.

The Commissary-General renews the recommendation, made in a previous annual report, that section 1144 Revised Statutes be so amended as to authorize the Commissary-General (instead of the Inspectors-General, as now authorized) to designate, with the approval of the Secretary of War, the articles which shall be kept on hand by the Subsistence Department for sale to officers and enlisted men, and that sections 1299 and 1300 be amended accordingly.

He also recommends that sales to company messes be exempted from the proviso of the last Army appropriation act, requiring 10 per centum to be added to all stores and other articles sold to officers and enlisted men. Such stores are, as a rule, purchased from funds received by the companies from the sale of savings of the ration to the Subsistence Department, and as that department pays the companies only the cost of the stores it purchases from them it is thought that it is hardly just to them to charge for supplies sold in lieu of the savings purchased 10 per centum in addition to their cost.

The Commissary-General renews his previous recommendations that cooks and bakers should be specially enlisted, extra pay given them, and schools established for their instruction; invites attention to that portion of report of Board of Officers on Army Cooking which relates to this subject.

The enactment of a law authorizing the Commissary-General to detail such officers of the Subsistence Department as may be necessary to investigate claims not already decided upon by the Commissary-General, or which, having been decided, may be reopened on account of new evidence submitted, is recommended.

#### MEDICAL DEPARTMENT.

The total number of deaths from all causes reported among the white troops was 266, or 12 per 1,000 of mean strength. Of these, 162, or 7 per 1,000 of strength, died of disease, and 104, or 5 per 1,000 of strength, of wounds, accidents, and injuries.

The proportion of deaths from all causes to cases treated was 1 to 142.

The total number of white soldiers reported to have been discharged the service on "surgeon's certificate of disability" was 677, or 31 per 1,000 of mean strength.

The total number of deaths of colored soldiers reported from all causes was 28, or 14 per 1,000 of mean strength. Of these, 15, or 8 per

1,000 of strength, died of disease, and 13, or 6 per 1,000 of strength, of wounds, accidents, and injuries.

The proportion of deaths from all causes to cases treated was 1 to 140.

The total number of colored soldiers reported to have been discharged on "surgeon's certificate of disability" was 42, or 22 per 1,000 of mean strength.

I invite the attention of Congress to the facts stated by the Surgeon-General concerning the great increase of the business of his office caused by the recent legislation upon the subject of pensions. The official demands upon the office during the fiscal year for information as to cause of death in case of deceased soldiers and the hospital record of invalids was 22,339, or an increase of 1,265 over the previous year, and greater by 1,954 than the average during nine years previously. Besides this increase of current business, the office was burdened with the arrears of past years, amounting on July 1, 1878, to 16,844 cases. With the additional clerical force which commenced work in May, 1878, the accumulation was rapidly reduced, so that on 26th of July last the number of cases awaiting action had been brought down to 2,744; but since July 1, 1879, a great increase in the number of new cases received has taken place. The average number of new cases, which had been 1,862 monthly during the previous fiscal year, rose during July, 1879, to 2,045, and during the month of August to 4,255. As a consequence, and notwithstanding every effort of which the present clerical force is capable, the number of cases in arrears has rapidly increased. By September 1, 1879, it was 4,651 cases. It is deemed certain that business of this character will continue to increase, and unless a temporary increase of the number of clerks is allowed to meet the emergency, the work of the office must again fall into arrears and greatly delay the adjustment of pension cases.

In the Division of Surgical Records the surgical reports received from medical officers of the Army at posts and with detachments of troops engaged in Indian hostilities were examined, and the cases reported were classified according to the seat or nature of injury or operation. The surgical portion of the Medical and Surgical History of the War was continued, and the descriptive catalogues of the surgical, anatomical, and miscellaneous sections of the Army Medical Museum were completed to include all specimens received during the fiscal year ending June 30, 1879.

The cases of wounds, accidents, and injuries reported in Class V of the monthly reports of sick and wounded numbered 5,308, while the mean strength of the Army was 23,663 men; 117 deaths were occasioned by wounds received in action or other violent causes, a proportion of 4.9 per 1,000 of the mean strength.

#### PAY DEPARTMENT.

The Paymaster-General recommends that the second section of the act of July 24, 1876, be rescinded, which forbids payment of mileage to

officers for travel "on any railroad on which troops of the United States are entitled to be transported free of charge." This act is described as a hardship toward the officers traveling without troops, deprived thus of reimbursement of actual expenses of traveling (of which mileage is intended to be an average), while he is not in a position to execute or enforce the policy of Congress toward the roads.

He again presents the claims of the annuity scheme, quoting the language of Secretaries Cass and Poinsett in favor of some such system, in their annual reports of 1833 and 1837.

He states that a large share of the most experienced officers appear to be in favor of an increase of pay of non-commissioned staff officers in regiments and of first sergeants of companies, as calculated to improve and elevate the rank and file.

He suggests that while the President now has power to confer brevets for distinguished conduct in the field, he should also have the power, in exceptional cases, of directing payment to be made to an officer according to his brevet rank. This would be especially desirable in reference to an officer commanding a department or an army in the field.

He states that the Freedmen's Bureau, for payment of bounties, &c., to colored soldiers, organized in 1867, and transferred in 1872 to the Adjutant-General, is now in operation in the Pay Department, under the act of March 3, 1879.

#### REPORT OF THE CHIEF OF ENGINEERS.

The report of the Chief of Engineers states that work upon our sea-coast defenses has been limited, in accordance with the terms of the act of March 23, 1878, to their protection, preservation, and repair. For the reason that these works are subject, more than any other national structures, with the exception, perhaps, of light-houses, to the destructive and deteriorating effects of the sea, the amount heretofore appropriated for these objects has proved insufficient, many necessary works of repair and protection remaining unexecuted at the close of the last fiscal year for want of funds.

No progress whatever has been made for several years past in the construction of new or in the modification of our old works, built before the inventions of modern ordnance and armored ships, for want of appropriations therefor; but the Engineer Department of the Army, in the light of full information respecting the recent great improvements in ordnance and armor, has prepared plans for modifying some of our old works and constructing new ones. These plans provide for mounting the heaviest of modern rifled guns and resisting the projectiles of cannon of the immense calibers now possessed by nearly every maritime nation of Europe.

The Chief of Engineers very truly remarks that, in the present condition of our sea-coast defenses, injuries to our citizens abroad and



insults to our flag could not be resented with that vigor and promptitude demanded by the honor and dignity of the nation, and justified by a knowledge that, come what may, our navy-yards, maritime cities, and depots for military and naval stores will be unassailable behind impregnable fortifications and obstructions; and I commend the views of that officer respecting the necessity for reasonable appropriations for our sea-coast defenses, as expressed in his report, to the earnest attention of Congress and the country.

The Battalion of Engineers stationed at the Engineer School of Application at Willets Point and at the Military Academy has been engaged in the development of our torpedo system, which has now been brought to a state of efficiency not inferior, it is believed, to that of any nation.

Fortifications and torpedoes, or submarine mines, have, in recent years, become the twin defenses of maritime countries, the latter being necessary to hold the enemy's vessels under the fire of the former in the approaches to our harbors; and I believe it is simply a matter of common prudence and good judgment that the appropriations asked for by the Chief of Engineers for providing torpedoes to be stored in our fortifications, from which they can be planted in time of war in the channels and fair-ways of our harbors, and for preparing our most important forts for operating them by providing the necessary bomb-proof covers for the electrical apparatus, galleries of approach, &c., be granted; also that, for the reasons stated by the Chief of Engineers, the means should be provided for increasing the Battalion of Engineers from the number now fixed at two hundred enlisted men, under the recent law reducing the Army, to five hundred and twenty enlisted men.

The construction, repair, preservation, and completion of certain public works on rivers and harbors, and the surveys and examinations connected therewith, have been prosecuted during the fiscal year ending June 30, 1879, with the means provided by the river and harbor act approved June 18, 1878, and the balances of previous appropriations remaining unexpended on July 1, 1878.

The execution of all works provided for in the river and harbor act approved March 3, 1879, for which the plans and projects have been approved, is being proceeded with. In the case of new works unavoidable delays have in some instances arisen from the necessity of considering legal questions touching the occupancy of their sites. For further information respecting these improvements and surveys reference may be made to the report of the Chief of Engineers, which contains a detailed account of the steps taken to carry out the provisions of the river and harbor acts and of the satisfactory progress and condition of these works. Although many of them are only partially completed, they have afforded an increased security and facility to navigation far exceeding in value the sums expended upon them, adding annually to the wealth and resources of the country by an increase of commerce,

due to the greater depth of channels, greater security in their navigation, and the saving of time in their use.

I again ask attention to the necessity of legislation to protect the channels of rivers and fair-ways of harbors from injuries arising from wanton deposits by passing vessels of ballast, ashes from steamers, and of all substances which would tend to the formation of shoals therein, and also to protect the breakwaters, piers, and other public works constructed by the United States from trespass upon as well as injury thereto.

To comply with the requirements of the joint resolution of Congress of June 20, 1879, a Board of Officers of the Corps of Engineers has been convened to inquire into and report upon the practicability of bridging or tunneling the Detroit River at or near the city of Detroit, without material or undue injury to the navigation of the river. The report of the board has not as yet been received.

The Mississippi River Commission, constituted by act of June 28, 1879, for the improvement of that river from the Head of the Passes, near its mouth, to its head waters, has been organized and has entered upon its duties.

The survey of the Mississippi River has been extended from Scanlon's Landing to Helena, Ark. The longitude and latitude of Louisiana, Mo., Rock Island, Ill., and Red Wing, Minn., have been determined. Charts Nos. 8, 9, 10, and 11 of the Mississippi River south of Memphis have been completed.

On the survey of the Northern and Northwestern lakes, the main triangulation connecting Lake Erie with Lake Michigan has been nearly completed. Coast charts Nos. 3, 4, and 5 of Lake Ontario and Nos. 2, 3, and 4 of Lake Erie have been finished.

The survey of the territory west of the one hundredth meridian has been continued in the States of Colorado, Texas, Nevada, California, and Oregon, and in the Territories of Arizona, New Mexico, Utah, and Washington, and in connection with this work a special survey of Great Salt Lake has been completed.

No funds were available for the prosecution of the field-work on this survey after June 30, 1879, and all parties were withdrawn from the field on or before that date. There are eight engineer officers now employed in the Western military divisions and departments in making surveys and in collecting and mapping the geographical and topographical information obtained in scouts and campaigns against hostile Indians. Maps prepared in this way are of great value to the War Department and to the Army. It is very desirable that the unexplored areas in the country liable to be traversed by the troops and hostile Indians be mapped as rapidly as possible, and an appropriation of \$50,000 is earnestly recommended for this purpose.

*Improvement of the South Pass of the Mississippi River.*—Mr. James B. Eads and associates began the construction of jetties and other works



at the South Pass of the Mississippi River, June 2, 1875. The object was to open and permanently maintain a navigable channel, 26 feet deep, through then existing extensive shoals and bars which were underlying about  $7\frac{1}{2}$  feet of water, and which, as obstacles to navigation, rendered this pass useless to commerce.

Under an act of March 3, 1875, authorizing the undertaking, Mr. Eads and associates were to receive certain payments as the improvement progressed toward the creation of the channel sought and required to be secured within a specified time, and they were to receive periodical payments for twenty years for its maintenance, with a view to insuring permanency of the improvement. The progress of the work has been the subject-matter of several reports during each year from an engineer officer on duty at Port Eads, and has been duly communicated to Congress.

In accordance with the provisions of the act of March 3, 1875, and amendatory acts, payments for the work have been made on requisitions dated as follows: January 20, 1877, \$500,000; January 10, 1878, \$500,000; June 21, 1878, \$500,000; between October 5, 1878, and February 17, 1879, \$216,882.06; March 7, 1879, \$750,000; between March 14 and May 15, 1879, \$214,251.27; May 29, 1879, \$500,000; June 26, 1879, \$68,886.67; July 3, 1879, \$500,000, and July 23, 1879, \$500,000; total, \$4,250,000. The half million of dollars last allowed concluded the payments authorized for *creating* the channel required by law.

The first grand stage of this important work was reached July 8, 1879, and from that date began a second undertaking relative to *maintenance* of the channel, which, if accomplished, entitles Mr. Eads and associates to \$100,000 per annum, payable in equal quarterly installments. The first quarterly payment has been demanded, and is under consideration on a certificate recently received from the engineer officer setting forth "that the maintenance, by James B. Eads and his associates, of a channel through the jetties at the mouth of South Pass, Mississippi River, twenty-six feet in depth, and not less than two hundred feet in width at the bottom, and having through it a central depth of thirty feet, without regard to width, has been accomplished from July 8 to October 8, 1879, with the exception of twenty days, when a failure in some part to maintain such a channel occurred. The failure was on the 14th, 15th, 16th, and 17th of August for the first period, and from August 27th to September 11th, inclusive, for the second period. During the whole of the interval from July 8 to October 8, 1879, a navigable channel having a greater depth than twenty-six feet has been maintained at the head of South Pass, and throughout that interval of time the twenty-six feet channel has been, at all times and in all places, here, at least one hundred and ninety feet wide."

The Attorney-General has been requested to render an opinion on several questions as to the proper construction of certain provisions of the law materially bearing upon the claim for payment. If the opinion

pending shall be favorable to Mr. Eads and associates, then the first quarterly payment for maintenance may be made.

Should the full channel be maintained within the meaning of the law for a period of six months from July 8 last, then Mr. Eads and associates will doubtless demand a first semi-annual payment of interest at five per centum per annum on the \$1,000,000 referred to in the acts of March 3, 1875 and 1879. The demand on this account will be duly considered as of course when presented for adjustment.

Besides other works connected with the creation and maintenance of the channel during the past year, the jetties at the mouth of South Pass have been capped with stone over their lower ends; additions have been made to the submerged dam in the pass, and over 4,000 feet of mattress walls, substantially new, have been constructed. The works established at the head of the pass, in order to increase the flow of water through South Pass, have been considerably extended and enlarged. The year has been signalized by a greater measure of success in the attainment of results than any other year since the inauguration of the works. The only problems in connection with the improvements, from an engineering point of view, remaining to be answered in the future, are those involved with the successful and continuous maintenance of the channel already obtained.

#### REPORT OF THE CHIEF OF ORDNANCE.

Under the various laws of the United States, the Ordnance Department provides arms and munitions of war for the whole military establishment, and has charge of the armories, arsenals, and other ordnance establishments for their manufacture, repairs, and storage. Thus, at the present time, the department is providing ordnance and ordnance stores for the sea-coast fortifications, the whole body of the militia, the Military Academy and the Artillery School, and the Regular Army, in the military establishment, and to the Treasury, Post-Office, and Interior Departments, and the Fish Commission, the Marine Corps, and the thirty colleges authorized by section 1225, Revised Statutes. In addition to this work, it is charged with other important duties in connection therewith not now necessary to enumerate.

The construction of the new buildings at Rock Island Arsenal has progressed in a satisfactory manner, and with the aid of the new appropriations asked for, the workshops will soon be in a condition to receive their machinery and commence manufacturing to meet the future wants of the country.

The convictions of the Chief of Ordnance as to the soundness of the policy of extending governmental support to and thereby actually keeping in existence the only establishments in the country organized and fitted to fabricate heavy ordnance, are felt by me, and are deepened by a fuller consciousness of how inadequately we are provided in this respect for even common emergencies. This, taken in connection with

the fact that our present sea-coast armaments (principally composed of smooth-bores) are almost useless for coping with the heavy artillery of the present, leads me again to urgently recommend that Congress consider the granting of liberal appropriations for our national defenses, as a matter of the first importance.

The important tests of the 8-inch breech-loading rifle, converted from a 10-inch smooth-bore gun, are still in progress, and up to date 202 rounds (190 with full battering charges) have been successfully completed. The endurance, so far, has proved satisfactory, and no evidences of want of endurance in its special construction have been, so far, afforded; and there are good grounds for the opinion that it will stand its thorough proof, and establish the fact that we can convert, after this system, our original smooth-bore cast-iron guns into breech-loaders, or produce original breech-loading cannon of the heaviest construction, using in a short time wholly the products of our own founderies and other manufacturing establishments.

Previous allusion has been made to the decided advantages to be derived from the use of breech-loading rifles, especially in casemated works. Since then the unfortunate disaster on board of the *Thunderer* (the bursting of a 38-ton muzzle-loading gun by the accidental insertion of two charges, impossible to occur in breech-loaders), and the unexcelled results (in power, accuracy, and successful manipulation) recently attained at Meppen, by Herr Krupp, in the trials of his breech-loading guns of 70 and 18 tons, have led to the conviction that it is highly probable that the general introduction of breech-loading instead of muzzle-loading cannon in the armaments of Europe, for all heavy ordnance especially, is a mere matter of time.

During the last fiscal year there were manufactured at the National Armory 20,005 Springfield rifles, and, under the law authorizing it, 1,000 of the experimental Hotchkiss magazine rifles. The former have been produced at a much less cost than heretofore, owing to the increased number manufactured and the improvement of the plant employed; and as there is now available a larger appropriation than usual for the present year, it is confidently expected that the cost will yet be further reduced in the future. There were in store on July 1, 1879, only 22,073 rifles and 5,406 carbines at the armory and arsenals, a wretchedly small number, considering the wants of the present and the calls that may be made in the future.

The Hotchkiss arms are now in the hands of the Regular Army for trial in actual service, and upon the reports to be made bimonthly will depend any recommendations for the supply to be hereafter manufactured. But whether this magazine gun is to be the arm of the future or not, it is not safe to delay providing an ample supply of the Springfield rifles.

The Ordnance Department has now in its possession, set up at the Watertown Arsenal, the finest machine in the world for testing the

strength of metals and other materials, and a small annual appropriation is asked to enable the department to use it. This machine was authorized by Congress, and constructed under the immediate supervision of the late United States board to test iron, steel, &c. Valuable results have already been obtained from its limited use, under circumstances very unfavorable, and it is suggested that a wise policy and a just appreciation of the advantages to inure to the various industries of the country will prompt the Congress to grant the small amount of money necessary to develop its capacities.

The work already accomplished has enlisted the active sympathy of scientific men of all classes and metal manufacturers and users, who have not limited their expressions of approval, but have supplemented them with funds to finish work which was commenced but could not be finished owing to the failure of Congress to appropriate the whole sum needed.

#### REPORT OF THE CHIEF SIGNAL OFFICER.

The Chief Signal Officer reports that the established course of drill and instruction in military signaling and telegraphy, meteorology and the Signal Service duties at stations of observation and report, together with the drills of the Signal Corps with arms, has continued at the School of Instruction and Practice at Fort Whipple, Va. The apparatus needed for the study and exercises, with instruments; for practice in the meteorological duties at stations of observation; the equipment for the drill in field signaling; the drill with the field telegraph train; the construction drill for permanent telegraph lines; and the duties on signal and telegraphic stations, is full and has been improved by useful additions.

The officers of the Signal Service pass the course of drill and instruction, and serve regularly at the post of Fort Whipple before being put upon any other duty. There have been instructed during the year 122 men as assistant observers and 9 for promotion to the grade of sergeant.

The whole active force of the Signal Corps, officers and enlisted men, is practiced, at this post, in the general drills with arms and with telegraphic equipments. The drills occur regularly and embrace all at the post or serving in Washington, sufficiently near to enable them to have the benefit of the practice.

The office files are crowded with applications for enlistment. The severe examinations are successfully undergone. The clause providing "that two sergeants may in each year be appointed to be second lieutenants" gives, by assurance of permanent service and promised reward, that stimulus to exertion so long and earnestly sought for. Until the results of this organization, up to this time so satisfactory, have been more fully tested, it is not advisable that changes be attempted.

One hundred and seventy stations have been maintained during the year to fill the system of stations of observation from which reports are

deemed necessary to enable proper warnings to be given of the approach and force of storms, and of other meteoric changes, for the benefit of agricultural and commercial interests.

Twenty-five stations of a second class, hitherto described as "Sunset stations," at which a single observation is taken, daily, at the time of sunset, by citizens employed for this purpose, have been continued in operation.

The daily exchange of telegraphic reports, had by comity of exchange with the chief meteorological office of the Dominion of Canada, has been continued, and warnings have been regularly sent from this office to enable signals to be displayed at the ports of the Dominion at times of threatened danger.

The issue for publication of the official deductions or forecasts had at the office of the Chief Signal Officer, and known as the Synopsis and Indications, has continued during the year. There has been no failure of the delivery of any report to the press during that period. The total number of the reports thus furnished at the hours of 1 a. m., 10.30 a. m., and 7.30 p. m., daily, has been 1,095.

The wide diffusion given these reports may be judged from the fact that they appear daily in almost every newspaper in the United States. When the forecasts or indications thus published are examined in reference to accuracy of preannouncement of the state of the weather only (not the forestating, as is the custom, the changes of the barometer, thermometer, and average wind-direction to happen), the average percentage of accuracy is found to be 90.7 per cent. verified. A minute analysis of the same forecast and a careful comparison with the weather and the instrumental changes above referred to, afterward occurring within the time and within the district to which each forecast has had reference, has given an average percentage of accuracy of 86.6 per cent. An average of 90 per cent. to follow this comparison is also believed to be attainable.

A telegraphic weather-map charted at this office at the hour for the morning report and rapidly telegraphed, by a process peculiar to the service, to New York, in time to appear in the lines of the charting in the paper going to press at 11.30 a. m., has been devised and is in daily use.

The display of cautionary day and night signals, by flags and lights, upon the lakes and the great ports of the United States upon the Atlantic and Gulf coasts, has been made systematically on occasions of supposed especial danger at ninety-four different sea and lake ports and cities. There were added on January 1, 1878, to the display of day and night signals at the ports which had been "Cautionary" alone up to that date, the display by day or at night of the "Cautionary Off-shore Signal," indicating that while winds might be high and there might be danger, the winds to follow were expected to blow "off-shore." It is of important utility in the management and for the safety of vessels to be

thus preadvised as to coming winds. The adoption of this signal, first made, so far as is known, at the ports of the United States, has much increased the usefulness of the service. Of the total number of cautionary signals thus displayed, 80.1 per cent. have afterwards been reported as justified. In the cases reported as failures of justification following the display, the wind did not attain, at the place of display, a violence held to justify it. No great storm has swept over any considerable number of the ports of the United States without preannouncement.

The plan of "Display Stations," referred to in the last annual report, has continued in operation. These stations are subordinate stations, located at the smaller lake or sea ports, and are classed several together in sections, each section being under the immediate supervision of a sergeant of the Signal Corps, located at a named station at some neighboring principal port to exhibit its storm-warnings. The power of displaying the warning signals will, with little added expense, more than double under this system.

The exhibition of symbol maps, on which the meteoric condition is shown by symbol at the rooms of the boards of trade, chambers of commerce, and of other commercial associations, and at places of public resort, for the benefit of shipping and other interests, the display of bulletins, the distribution of weather maps, and the employment of other methods for rapidly diffusing for public use the information had at this office, have been continued.

By an arrangement with the Post-Office Department, 6,142 printed "Farmers' Bulletins," on which appear daily the forecasts of this office, have been distributed and displayed in frames daily at as many different post-offices in different cities, villages, and hamlets in different States, for the use of the agricultural population throughout the United States.

A "Weather Case or Farmers' Weather Indicator," an instrument arranged to exhibit together on a simple plan the meteorological indications of several instruments, and in such way that they can be easily noted by any one, is in preparation for general issue.

Since the date of the last annual report, a Railway Bulletin Service, on railways, has been established in co-operation with this office. The different railway companies receive at the time of the midnight report and by telegraph a copy of the report, which is distributed under supervision of the superintendents of the railway telegraphs, to designated stations along the lines.

The river reports, giving the average depth of water of the different great rivers of the interior, and notice of dangerous rises, for the benefit of river commerce and the population in the vicinity, have been regularly made, telegraphed, bulletined in frames, and published by the press at the different river ports and cities. River stations have been opened during the year on the principal California rivers.

A circular issued on March 15, 1875, showing the range between high



and low water marks on the western rivers, and the height at which the river rises became dangerous along their banks, is believed to have been the first systematic attempt to establish a "danger line" on these rivers. This circular was prepared from *data* collected at this office, and was given by order of the Secretary of War a wide circulation through the press and otherwise.

A series of canal reports, announcing temperatures probable to affect the canal commerce, were issued during the season of closing navigation at the commencement of the last winter, for the uses of canal commerce in the several States and the interests depending thereon.

The regular daily publication of the reports by the press, now continued for nine years without cost to the United States, is considered as an evidence of the usefulness of the reports and of the favor with which they are received by the communities for which they are intended.

The office publications, the *Weekly Weather Chronicle* and the *Monthly Weather Review*, have been regularly issued during the year. A number of valuable charts have been prepared.

By authority of the War Department, and with the courteous co-operation of scientists and chiefs of meteorological services representing the different countries, a record of observations taken daily, simultaneously with the observations taken throughout the United States and the adjacent islands, is exchanged semi-monthly. These reports are to cover the territorial extent of Algiers, Austria, Belgium, Great Britain, China, Central America, Denmark, France, Germany, Greece, India, Italy, Japan, Mexico, The Netherlands, Norway, Portugal, Russia, Spain, Sweden, Switzerland, Turkey, British North America, the United States, Sandwich Islands, West Indies, and South America.

On July 1, 1875, the daily issue of a printed bulletin, exhibiting these international simultaneous reports, was commenced at this office, and has been since maintained.

On July 1, 1878, the first issue of an international weather map, issued daily and embracing the whole northern hemisphere, was commenced at this office. The issue of such a map, thus first issued in the United States, is without a precedent in history. The studies it makes possible must lead to important results in matters relating to international meteorology, and possibly to the international exchange of data on which "warnings" may be based in distant countries. Additional weather maps of the northern hemisphere, tracing storm tracks upon the oceans and exhibiting meteorological conditions by months, have been issued during the present year.

The sea-coast service of the Signal Service, in connection with the Life-Saving Service, has been continued during the year.

A code of danger or distress signals, to be furnished without cost to all vessels sailing from the ports of the United States, and enabling them to communicate by flags with stations or relief parties on the shore in case of need, disaster, or distress, is widely distributed.

In pursuance of the acts of Congress authorizing the construction and operation of telegraphic lines in the interior and upon the frontier, for connecting military posts and stations, and for the protection of the populations from Indian and other depredations, officers and enlisted men of the Signal Corps have been continued upon these duties. The lines in Arizona, New Mexico, and upon the Texan frontier, are nearly completed. The lines in the Northwest, for which provision is made, are pushed rapidly forward. The work of construction has been in large part done by working parties furnished by the active co-operation of department commanders. A total length of 4,467 miles of line, including 543 miles on the sea-coast, was in operation and maintained in the care of officers and enlisted men of the Signal Corps, June 30, 1879.

The lines carried into a country held before these lines were built to be impracticable for such constructions, and maintained in regions and with circumstances as difficult for such operations, perhaps, as any in the world, have been successfully worked as compared with lines under other management and at all similarly circumstanced. The lines have proven of very great value in Indian wars.

The Chief Signal-Officer recommends that there be just provision, by legislation, for the permanent employment and grades of the officers of the corps. The increase of the enlisted force of the corps is recommended as a measure of economy. It is hoped there may be no failure in the appropriation for the service of the amounts estimated for the ensuing year; they have been estimated with careful economy.

#### THE MILITARY ACADEMY.

I transmit herewith the annual report of the Board of Visitors of the Military Academy at West Point, and invite attention to their recommendations.

It appears that the enlargement and improvement of the cadet barracks is demanded by considerations both of health and of comfort, and it is accordingly recommended.

The Superintendent, Major-General Schofield, reports that it is very important to provide suitable accommodations at West Point for the Board of Visitors and other prominent persons who visit the Academy officially during the annual examination in June. The small hotel situated on the plain is the property of the post fund, the United States having contributed nothing towards its erection. It was designed for the accommodation of the parents and friends of cadets visiting West Point, and of officers transiently at the post. During the commencement season it is wholly occupied by the Board of Visitors and other officials, greatly to the discomfort of all other guests, mainly the parents and friends of the cadets, for whose accommodation the hotel was especially intended.

I concur with General Schofield in recommending an appropriation for the erection of a cottage, adjacent to the hotel, for the use of the



Board of Visitors and other official visitors to the Academy. It is believed that \$10,000 would be a sufficient sum for the purpose.

#### LEAVENWORTH MILITARY PRISON.

The annual reports from the Leavenworth Military Prison indicate a very satisfactory progress and condition. The labor of the prisoners has been utilized, as far as possible, in manufacture of articles needed for the use of the Army. Extensions have been made to the buildings, and alterations of buildings already in use have been made to adapt them to the better occupancy, both for health and labor. Prisoners have been employed largely in mechanical labor, partly in the work of building the prison wall, but chiefly in the manufacture of shoes, tent pins, and barrack chairs for the Army. The number is reported as follows: 8,530 chairs, 40,000 tent pins, and 51,756 pairs of shoes. The manufacture of boots has only been recently commenced, because of contracts previously made with private manufacturers. The prison farm now contains about fifty acres, all but seven of which have been cleared, fenced, and is cultivated by prisoners' labor. Particular attention has been given to sanitary measures, diet of prisoners, &c., and the report of the prison surgeon shows but three deaths in the year out of a monthly average strength of 327 men.

The governor of the prison makes satisfactory report in relation to the conduct of the prisoners, having but seldom to resort to any severe discipline. This is attested also by the fact that all but an exceedingly small percentage of prisoners secure their release sooner than the expiration of their full term, by earning an abatement under a regulation which allows five days' reduction for each month of good conduct.

The duties required of the officers of the prison are exacting, and the manner of their performance is worthy of commendation.

It is hoped that legislation, which was asked last winter, may be secured at the coming session of Congress to authorize the use of the earnings of prisoners and receipts for the sale of manufactured articles toward the maintenance of the prison.

GEO. W. McCRARY,  
*Secretary of War.*

# PAPERS

ACCOMPANYING

## REPORT OF THE SECRETARY OF WAR.

### REPORT OF THE GENERAL OF THE ARMY.

HEADQUARTERS OF THE ARMY,  
Washington, D. C., November 1, 1879.

I now have the honor to submit this, my annual report for the months, and will preface it as usual by the following tabular and returns, compiled by the Adjutant-General.

Organization of the Regular Army."

General return or exhibit of actual strength of the Regular

Distribution of troops in the Military Division of the Missouri,"  
including the Departments of the Missouri, Texas, Platte, and

Military Division of the Atlantic, comprehending the Depart-  
ments East and South.

Military Division of the Pacific, comprehending the Departments  
of the Columbia, and Arizona.

Department of West Point.

Table B will show that the Army at present is com-

	Officers.	Enlisted men.
.....	11	-----
.....	17	-----
.....	6	-----
.....	9	-----
.....	60	-----
.....	26	-----
.....	179	187
.....	54	-----
.....	110	192
.....	63	397
.....	3	456
.....	29	-----
.....	556	1,232
.....	430	7,206
.....	278	2,387
.....	851	10,973
.....	1,559	20,566
.....	1	-----
.....	-----	114
.....	-----	151
.....	-----	186
.....	-----	1,710
.....	-----	70
.....	-----	233
.....	1	2,464
.....	2,127	24,262
.....	Retired, 388 officers.	

The 11 generals, 1,559 officers, 20,566 men, and 233 Indian scouts, with such of the officers of the general staff as are assigned by the War Department to duty with the troops, constitute the Army proper, or the "combatant force." All other parts of the military establishment are provided by law for special service more or less connected with the Army or militia, but are not available for frontier defense; as for instance, the 397 enlisted men of ordnance are in fact workmen at the arsenals; the 192 men of engineers are at Willets Point undergoing instruction in torpedo-practice, and are not subject to the division commander; the 456 men of the Signal Corps are employed in observing the weather or in working telegraphs; the 114 ordnance-sergeants have charge of old forts or fixed magazines; the 151 commissary-sergeants are in charge of stores; 187 are stewards of hospitals; the West Point detachment—186—is localized at the Military Academy; 70 men comprise a prison-guard at Fort Leavenworth, and the recruiting detachments—1,710—are at David's Island, Columbus, Ohio, and Jefferson Barracks, Mo. These various detachments, aggregating 3,463 enlisted men of the highest grades, compose about one-sixth part of the enlisted men provided by law for the whole Army, leaving but 20,799 for actual service. I mention these figures in some detail, because I know that it is the popular belief, shared in by many members of Congress, that we have 25,000 men for duty. I have done all in my power to reduce these detachments to the lowest number possible, so as to afford more men to our skeleton companies, but have found it impossible, and I notice that similar detachments are reported on all Army returns for fifty years back.

There are 430 companies in the Regular Army; 25,000 men would give 58 to each, which is as small as any company should be, and I earnestly recommend that you ask Congress to so legislate that the 25,000 men provided by law may be allowed exclusively for the regiments of the line, and that special provision be made for these several detachments, as has already been done for the Signal Service. The Army cannot, with justice, be held responsible for the work of 25,000 men, when so large a fraction is necessarily diverted to other uses, it may be of equal national importance.

Tables C, D, E, and F show how these troops are distributed for service. The whole territory of the United States is divided into nine departments, and these departments are grouped into three grand military divisions, commanded by Lieutenant-General Sheridan, Major-General Hancock, and Major-General McDowell.

West Point constitutes a distinct department, commanded by Major-General Schofield.

In order to show the vast amount of labor and service performed by officers and men, I herewith submit full reports by all the division and department commanders, with such subordinate reports as seem necessary to a full understanding of the condition of the troops and the history of events during the past year. These are so full and interesting that I might safely leave each commander to state his own case, but in order to give emphasis to certain recommendations by department and division commanders, I am forced to refer to some of the events in partial detail.

In May last General Terry, commanding the Department of Dakota, reported that Indians from Sitting Bull's camp beyond the northern national boundary had followed the buffalo south and were likely to create disorder and commit acts of hostility against Indians and others belonging on our side, and that he knew of no way to put a stop to this

her than by organizing a strong column at Fort Keogh, country, and then establishing a summer camp of moderate Creek Agency, on the Missouri River, but that under excuse did not feel justified in adopting this course, and asked us. He was promptly notified that there was no objection to operations and a temporary cantonment, but that we were to build any permanent post in that quarter, other than one, for which Congress had made an appropriation. General Terry committed this task to Colonel Nelson A. Miles, commanding the Yellowstone, to whose report, and to that of General Terry, I refer for full details of the whole expedition. It accomplished what was designed, and resulted in the withdrawal north of the all hostile Indians, and a better understanding with the Dog Soldiers who have charge of the Canadian Indians. Nevertheless, that a large body of Indians do yet remain in Canada near any of whom are hostile Sioux, whose relatives are with the Spotted Tail on their reservation; that the buffalo on which the Indians subsist are fast disappearing, and that want and famine compel them to depredate for food on our Indians or on the game and that some more permanent security must be found from the good will of our neighbors. The country north of the River from Fort Buford to Assiniboine, "a distance of the crow flies," is perfectly open to such incursions, and General Terry advises that a new, strong, and permanent military post be established on the national boundary between these two points, and asks for an appropriation of \$200,000. He also asks for an additional \$100,000 to complete Fort Assiniboine. These two posts will be on or near the national boundary, and will continue for a long while, if not forever, our western line of defense, and therefore such structures should be of stone or brick.

Four years since the Yellowstone was the northern defensive line, threatened by the most warlike Indians of the continent, and provided for the building of two new posts thereon, viz, Keogh and Fort Assiniboine. As usual, the building of these posts or places of security has retarded the rapid settlement of the whole line from Bismarck to the mouth of the Missouri. That, at the same rate of progress, in two or three years the whole line, like that along the Platte, will be able to take care of itself, and the posts at Fort Keogh and Custer may be abandoned. Then we will have to move our posts northward; and probably it is wiser to jump to this and take post at once along the national boundary, in the place referred to by General Terry will be absolutely necessary. I therefore recommend that Congress be asked to appropriate \$200,000 to complete Fort Assiniboine, and \$200,000 to build a new post on Mount Hood, at some point near the 107th parallel west of the exact spot to be afterward determined by careful examination. That the appropriation be made available for two years.

In conclusion I also beg to submit my conviction that very soon a series of events will make it absolutely necessary to remove all the Indians now located on the Upper Missouri, viz, Arickarees, Gros Ventres, Bloods, and Crows, to the Sioux Reservation below Fort Tule, and to open up for actual settlers all the land in the Territory south and west of that reservation.

#### KANSAS BORDER TROUBLES.

The Territory, south of Kansas and west of Arkansas, is by far the most valuable body of land now reserved for the sole use and occu-

pation of any of the Indian tribes. As early as April, 1879, certain designing parties put in circulation a report that the surplus land would soon be opened by Congress to settlement, and emigrants at once began to cross over and stake out "claims."

The President issued his proclamation of April 26, 1879, and gave orders that the military authorities should respond to the call of the rightful civil agents, who were required to remove all intruders or trespassers by force if necessary, also to protect the Indians in the full and free enjoyment of all parts of that Territory. This most delicate duty has been admirably performed by the troops under the orders of General Pope, to whose report I refer for fuller details, and I now only allude to the subject to illustrate how military posts result from temporary and local causes. Small detachments have all summer been distributed and are yet posted along the southern border of Kansas in tents, but as winter comes on the officers in command will naturally construct huts and houses, which will, unless the cause be soon removed, result in a greater number of the small posts which already add so much to the cost of the Army. Many of these posts, not only in Kansas, but throughout the West, along our northern border, and on the Atlantic and Gulf seaboard, which were absolutely necessary in their day, are now more than useless. All of them contain, however, more or less public property which must be guarded and accounted for by existing laws. These small posts could be abandoned to great advantage to the military and in the interest of economy. Congress alone can dispose of any land or buildings once reduced to possession, and I am aware that the Secretary of War is powerless in the premises, yet I trust he will ask of Congress the necessary authority to sell all superfluous posts, under such restrictions as it may impose. I believe that out of the great number of forts and military posts now garrisoned or in the custody of ordnance sergeants about thirty might be sold to great advantage. By diminishing the number of such posts we can collect our troops in larger garrisons at essential strategic points, increasing their efficiency and usefulness, and thereby will avoid the cost of repairs to buildings of no military value whatever. I have heretofore reported the names of several such forts and military posts, and will be ready at any moment to increase the list whenever called on to do so.

#### AFFAIRS IN TEXAS.

The report of General Ord shows a most satisfactory condition of affairs in that department, especially along the Rio Grande frontier. The troops have been most active in counteracting the effects of raids made by small bands of thieving Indians and vagabonds from Mexico, and from the direction of New Mexico; have created a comparative freedom from danger which has become habitual in that quarter of our country for two or three years, and have thereby aided materially in stimulating the great prosperity which now prevails in Texas. A large immigration has poured into that State, filling up her waste lands, and as a consequence settlements have overrun Forts Richardson and Griffin, and compelled the removal of the frontier further west. General Ord now asks a specific appropriation for a post on the line between Forts Concho and Elliott to give increased security to the very large and growing trade in cattle driven from Texas by this route to the railroad at Fort Dodge. I am aware that Congress regards these new posts as extravagant; but each one repays a hundred-fold its cost by increased security and increased national wealth. I therefore recommend the appropriation of \$60,000 for this projected post. If Forts Griffin and

Richardson (which this new post is designed to replace) could be sold, the proceeds would go far toward building the new one; but the law compels all moneys received by sales of any kind to go to the miscellaneous receipts of the Treasury, and no permanent military structures can be erected without a specific appropriation by Congress.

I also recommend that a further appropriation of \$100,000 be made for new buildings at existing military stations in Texas, to be disbursed under the direction of the chief quartermaster of the department, and subject to the orders of the department commander.

Heretofore, about one-fifth of the effective force of the whole Army has been stationed in Texas, but recently General Sheridan was forced to draw from Fort Clark Colonel Mackenzie and the six companies of the Fourth Cavalry stationed there, in order to make up the force now at Fort Garland, which was imperatively demanded for service in the Ute country.

There still remain in Texas two full regiments of cavalry, four of infantry, and four companies of artillery, which will be maintained to the maximum of strength, and by activity will make up for want of numbers. I trust the authorities of Texas will appreciate the necessity for troops elsewhere, and believe that all in the military service are laboring to perpetuate the improved condition of affairs which seems to have given both satisfaction and prosperity.

#### THE UTES AND APACHES.

The Indians known as "Utes," from which Utah takes its name, was applied to all the nomads west of the Rocky Mountains as far as Nevada, and south into New Mexico and Arizona. Gradually they have been surrounded by white settlements and broken up into many distinct bands, the four principal of which are located as follows: The Uintahs in Northeast Utah, estimated at 430 souls; the Los Pinos in the Uncompahgre Valley, Colorado, estimated at 2,000 souls; the Southern Utes in Southwest Colorado, with 934 souls, and the White River Utes in Northwest Colorado, estimated at 800 souls. To such as desire to study the nature of recent events in that quarter I refer to the reports of the agents of these separate bands, which will be found on pages 622, 510, 512, and 514 of Part I of the Report of the Secretary of the Interior for the year 1878; and for a more complete description of the Indians themselves and the country they inhabit, I beg to refer to a most interesting report made by Lieutenant McCauley, Third Cavalry, of October 15, 1878, published at length in Senate Ex. Doc. No. 62, third session, Forty-fifth Congress, and to Hayden's maps of Colorado. Suffice it now for me to say that these Indians are of the worst class, and occupy the roughest part of our country for farming, grazing, or for military operations. Their management is complicated by the fact that their country is known to possess mineral deposits, which attract a bold and adventurous class of white men. They are very warlike, and have no difficulty in procuring, in exchange for their deer-skins, horses, and sheep, any amount of the best rifles and ammunition. In former years they used to come east of the Rocky Mountains to hunt buffalo, but of late years they have confined their hunting to the bear, elk, and deer of the mountain region. As long as game lasts they will not work or attempt farming, except in the smallest and most ridiculous way, and that only by compulsion.

Mr. Meeker, the Indian agent at White River, has had occasion frequently to address complaints to the Commissioner of Indian Affairs, to



the governor of Colorado, and the commanding officer of the nearest military post (Fort Steele) to the effect that the Indians of his agency would not remain on their reservation, and were engaged in burning forests, &c. On the 8th of July last he complained to Governor Pitkin that Major Thornburgh paid no attention to his appeals, and that a military force was needed immediately to bring wandering Indians back to the agency and to stop their destruction of timber. This was communicated the same day to General Sheridan, with instructions to take such measures as would accomplish the wishes of the Interior Department. Fort Steele is distant about a hundred and fifty miles from this agency, and had a comparatively small garrison, which was utterly inadequate to such requisitions. On the 18th and 28th of July the Secretary of the Interior transmitted to the War Department similar requests, which were referred "for report" through General Sheridan to General Crook, commanding the Department of the Platte, including Fort Steele. General Crook made report that the Indians complained of, besides killing the game, had committed no depredations; that the post commander, Major Thornburgh, did not receive timely notice of the presence of the Indians, and that it was impossible for the military placed at such a great distance from the agency to prevent the Indians leaving without authority, unless warned in due time by the Indian authorities; that unless troops are stationed at the agencies they cannot know in time when Indians are absent by authority, nor can they prevent the occurrence of troubles for which they are frequently and most unjustly held responsible.

On the 2d of September the Secretary of the Interior transmitted a copy of a report from Mr. Meeker, asking for a military force at the agency; and again on the 15th of September the agent reported that he had been assaulted by Johnson, a leading chief; that his life and the line of his family were not safe, and that he wanted protection immediately. Orders went forthwith to General Sheridan to cause assistance to go to him from the nearest military post. The agency is in Colorado, therefore within the Department of the Missouri, commanded by General Pope, whereas the nearest post was Fort Steele, on the Union Pacific Railroad, in the Department of the Platte, commanded by General Crook. Some delay may have been occasioned by this fact, also by the fact that Mr. Meeker had before only asked that the Indians should be driven back to their agency and prevented from burning timber hundreds of miles away from Fort Steele, and had not until September 15 manifested any special apprehension of personal danger.

These complaints are almost of daily occurrence at the various agencies, and an army of a hundred thousand men would not suffice to respond to all the calls for help, in illustration of which I will mention that within two days an alarm has been sounded from Bayfield, on Lake Superior, by an Indian agent alarmed for the Chippewas, who have been peaceful for thirty years. At that date (September 15) General Pope had a company of the Ninth Cavalry at Sulphur Springs, Middle Park, Colorado, under Captain Dodge, whom he had ordered to the White River agency to "settle matters." About this time much correspondence passed between General Pope, General Sheridan, and myself, in which General Sheridan reported that four companies were already *en route* for the White River Agency from General Crook's department, by reason of the fact that this agency was easier reached from that direction than from General Pope's department, and that he (General Pope) need not take any action in reference thereto. General Sheridan recommended "no action in so far as the military are concerned, except

simply to quell the existing disturbances, and then to await such final decision as may seem best by the Indian Bureau."

The orders to Major Thornburgh, commanding Fort Steele, were made by General Crook, based on indorsements from Army headquarters, and were dated September 16, 1879, "to move with a sufficient number of troops to the White River Ute Agency, Colorado, under special instructions."

Major Thornburgh moved from Fort Steele, September 21, 1879, with the effective strength of three companies of cavalry and one of infantry, about two hundred men, with rations for thirty days and forage for fifteen days; a force which was considered by everybody as sufficient for the purpose. Mr. Meeker had only asked for one hundred men. Major Thornburgh reported back from a camp on Bear River, under date of September 26, that he had met some Ute chiefs who seemed friendly, and promised to go with him to the agency. "They say they did not understand why we had come," and he did not anticipate trouble. With a knowledge now of the result, and to throw as much light on the immediate cause of this war as possible, I give the last letters which passed between Major Thornburgh and Mr. Meeker; and I will here record my judgment that Major Thornburgh was an officer and gentleman of whom the Army has reason to be proud; he was young, ardent, ambitious, of good judgment, and no man could have done better in life or met death with more heroism:

HEADQUARTERS WHITE RIVER EXPEDITION,  
Camp on Fortification Creek, September 25, 1879.

SIR: In obedience to instructions from the General of the Army, I am *en route* to your agency, and expect to arrive there on the 29th instant, for the purpose of affording you any assistance in my power in regulating your affairs, and to make arrests at your suggestion, and to hold as prisoners such of your Indians as you desire, until investigations are made by your department.

I have heard nothing definite from your agency for ten days, and do not know what state of affairs exists, whether the Indians will leave at my approach or show hostilities. I send this letter by Mr. Lowry, one of my guides, and desire you to communicate with me as soon as possible, giving me all the information in your power, in order that I may know what course I am to pursue.

If practicable, meet me on the road at the earliest moment.

Very respectfully, your obedient servant,

T. T. THORNBURGH.

Major Fourth Infantry, Commanding Expedition.

MR. MEEKER, Indian Agent, White River Agency, Colo.

WHITE RIVER AGENCY, COLO., September 27, 1879.

SIR: Understanding that you are on the way hither with United States troops, I send a messenger, Mr. Eskridge, and two Indians, Henry (interpreter) and John Ayersly, to inform you that the Indians are greatly excited, and wish you to stop at some convenient camping place, and then that you and five soldiers of your command come into the agency, when a talk and a better understanding can be had.

This I agree to, but I do not propose to order your movements, but it seems for the best.

The Indians seem to consider the advance of the troops as a declaration of real war. In this I am laboring to undeceive them, and at the same time to convince them they cannot do whatever they please. The first object now is to allay apprehension.

Respectfully,

N. C. MEEKER.

Indian Agent.

To Major THORNBURGH,

Or Commander United States Troops between Bear and White Rivers, Colorado.

HEADQUARTERS WHITE RIVER EXPEDITION,  
Camp on Williams Fork, September 27, 1879.

SIR: Your letter of this date just received. I will move to-morrow with part of my command to Milk River, or some good location for camp, or possibly may leave



my entire command at this point, and will come in as desired with five men and a guide. Mr. Eskridge will remain to guide me to the agency.

I will reach your agency some time on the 29th instant.

Very respectfully, your obedient servant,

T. T. THORNBURGH,

*Major Fourth Infantry, Commanding Expedition.*

Mr. MEEKER,

*United States Indian Agent, White River Agency.*

HEADQUARTERS WHITE RIVER EXPEDITION,

*Camp on Deer Creek, September 28, 1879.*

SIR: I have, after due deliberation, decided to modify my plans as communicated in my letter of the 27th instant in the following particulars:

I shall move with my entire command to some convenient camp near, and within striking distance of, your agency, reaching such point during the 29th. I shall then halt and encamp the troops and proceed to the agency with my guide and five soldiers, as communicated in my letter of the 27th instant.

Then and there I will be ready to have a conference with you and the Indians, so that an understanding may be arrived at and my course of action determined. I have carefully considered whether or not it would be advisable to have my command at a point as distant as that desired by the Indians who were in my camp last night, and have reached the conclusion that under my orders, which require me to march this command to the agency, I am not at liberty to leave it at a point where it would not be available in case of trouble. You are authorized to say for me to the Indians that my course of conduct is entirely dependent on them. Our desire is to avoid trouble, and we have not come for war.

I requested you in my letter of the 26th to meet me on the road before I reached the agency. I renew my request that you do so, and further desire that you bring such chiefs as may wish to accompany you.

I am, very respectfully, your obedient servant,

T. T. THORNBURGH,

*Major Fourth Infantry, Commanding Expedition.*

Mr. MEEKER,

*United States Indian Agent, White River Agency, Colo.*

UNITED STATES INDIAN SERVICE,

*White River Agency, September 29, 1879—1 p. m.*

DEAR SIR: I expect to leave in the morning with Douglas and Serrick to meet you. Things are peaceable, and Douglas flies the United States flag. If you have trouble in getting through the cañon to-day let me know "in (what) force." We have been on guard three nights and shall be to-night, not because we know there is danger, but because there may be. I like your last programme. It is based on true military principles.

Most truly, yours,

N. C. MEEKER,

*Indian Agent.*

I give these letters entire because I believe that Major Thornburgh acted from beginning to end exactly right. So did Mr. Meeker, and the crimes afterward committed rest wholly on the Indians.

On the 29th of September Major Thornburgh's command was attacked by about 300 well-armed warriors at a most difficult part of the road, about twenty miles north of the agency. Major Thornburgh and ten of his men were killed; three officers and twenty men were wounded, when the command under Captain Payne fell back to the wagons, and made preparations to defend themselves. Captain Payne succeeded in sending a messenger back to the railroad, with a report of the fight—its general results, and a call for assistance. General Crook instantly ordered Col. Wesley Merritt, of the Fifth Cavalry, then at Fort D. A. Russell, with 530 men, by rail to Rawlins, and thence to the relief of this command. By most extraordinary exertions and a hard march, Colonel Merritt reached the beleaguered command on the morning of October 5, and found that Captain Dodge's company of the Ninth Cavalry had most opportunely arrived the day before from the Middle Park.

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\* In the original "in force." I think he meant "in what force."—W. T. S.

Other troops were hurried forward by Generals Sheridan and Crook, re-enforcing Merritt to about a thousand effectives, when he, after providing for the wounded and dead, pushed on to the agency, which he reached on the 11th, finding it burned down, and the murdered bodies of Mr. Meeker and six employees, having buried three others on the road. The Indians had all gone south toward Grand River, carrying with them Mrs. Meeker, Miss Meeker, Mrs. Price, and her two children.

As soon as the re-enforcements *en route* overtook him, Colonel Merritt began his pursuit south, over mountains impassable to anything but men, horses, and pack animals; but before he had reached the crest of the first mountain, he was overtaken by a dispatch of which the following is a copy:

HEADQUARTERS ARMY OF THE UNITED STATES.

*Washington, D. C., October 13, 1879.*

General P. H. SHERIDAN,  
*Commanding Division, Chicago, Ill.:*

The honorable Secretary of the Interior has, this 10.30 a. m., called with a dispatch, given at length below, which is communicated for your information, and which should go for what it is worth to Generals Crook and Merritt. The latter, on the spot, can tell if the hostiles have ceased fighting. If so, General Merritt should go in every event to the agency to ascertain the actual condition of facts. All Indians who oppose must be cleared out of the way if they resist. If they surrender their arms and ponies, they should be held as prisoners, to be disposed of by superior orders.

The Secretary of the Interior will send a special agent at once to Ouray, who is believed to be honest and our friend. He may prevent the Southern Utes from being involved, and the Interior Department can befriend him afterward by showing favor to some of his special friends.

But the murderers of the agent and servants must be punished, as also those who fought and killed Major Thornburgh and men.

Please acknowledge receipt.

W. T. SHERMAN, *General.*

[Inclosure by telegraph.]

LOS PINOS INDIAN AGENCY, COLORADO,  
*October 12, 1879—1.50 p. m.*

Employee Brady and escort of Indians, just arrived from White River, reports Utes recognized and obeyed Ouray's order; withdrew, and will fight no more unless forced to do so. If soldiers are now stopped, trouble can be settled by peace commission to investigate facts and let blame rest where it may. This will save life, expense, and distress, if it can be accomplished.

*Later, 1.30. p m. (?)*—Runner just from Southern Ute Agency, with letter from agent. Council held; Utes will abide Ouray's request; want peace; will stay at home, and take no part in White River trouble; and request Ouray to inform them of their decision.

I concur in and indorse the above.

STANLEY, *Agent.*

OURAY,  
*Head Chief of Utes.*

HEADQUARTERS MILITARY DIVISION OF THE MISSOURI,  
*Chicago, Ill., October 13, 1879.*

General W. T. SHERMAN,  
*Washington, D. C.:*

Your dispatch of this date this moment received, and will be forwarded immediately to General Crook, with orders to carry out your instructions therein set forth. A copy will also be sent to General Pope.

P. H. SHERIDAN,  
*Lieutenant-General.*

Colonel Merritt construed these dispatches as limiting his action to White River, and accordingly returned to the neighborhood of the burned agency, established his camp, and there awaited the result of

the negotiations begun by order of the honorable Secretary of the Interior.

Whilst so awaiting, Colonel Merritt, on the 20th of October, sent forward two companies of cavalry, under Captain Wessells, and Lieutenant Hall, with a party of scouts to reconnoiter roads toward the summit between White and Grand Rivers. Lieutenant Weir, of the Ordnance, a fine young officer, asked and obtained leave to accompany Lieutenant Hall. When about twenty miles out, Lieutenant Weir and William Humme, chief of scouts, rode to one side to hunt deer, encountered a picket party of Indians. Shots were exchanged, and both Lieutenant Weir and Humme were killed. Their bodies were afterward recovered. This party of Indians have since been met by Mr. Adams, the special agent, and insist they had no purpose to fight; that they were simply watching the movements of Merritt's troops; that Mr. Humme fired first, killing one of their party, when they in turn killed both Humme and Lieutenant Weir. The sad fate of this young officer is specially deplored by a very large circle of friends.

Meantime great alarm pervaded all parts of Colorado, and was spreading to New Mexico and Wyoming. Reports of the wildest character came pouring in from places a thousand miles away from any real danger, but Generals Sheridan, Crook, and Pope, knowing the proclivity of Indians to war, and the intimate relations of the four bands of Utes, numbering 4,164 souls, of whom about 800 are skillful, brave warriors, made immediate preparations for every contingency. Colonel Merritt's force at White River was strengthened to about 1,500 men. Colonel Mackenzie, with six companies of the Fourth Cavalry, was brought rapidly from Fort Clark, Texas, to Fort Garland, Colorado, and re-enforced by other troops belonging to the Department of the Missouri to about 1,500 men, and Colonel Hatch, of the Ninth Cavalry, with about 450 men from New Mexico, was ordered to Fort Lewis, Pagosa, Colo. The following dispatch will show the objects aimed at, and are the "orders" existing at this moment of time:

HEADQUARTERS OF THE ARMY,  
Washington, D. C., October 24, 1879.

General P. H. SHERIDAN,  
*Commanding Division, Chicago, Ill.:*

I have received your three dispatches of yesterday, giving account of the killing of Lieutenant Weir and of the strength of your forces at White River, Forts Garland and Lewis.

All these seem strong enough and are well commanded. Let all preparations proceed, and be ready the moment I give the word to pitch in. Should Agent Adams fail in his mission I understand that the civil authorities will stand aside and the military will take absolute control of this whole Ute question and settle it for good and all. Meantime, humanity to the captive women and the friendly Utes, even of the White River Agency, justifies this seeming waste of time.

W. T. SHERMAN, *General.*

All the world now knows that the special agent, General Charles Adams, of Colorado, appointed by the Secretary of the Interior to conduct these negotiations with the hostile Utes, has partially succeeded in his mission; has obtained the surrender of Mrs. and Miss Meeker, Mrs. Price and her two children, who are already safe with their friends. He is now supposed to be again with the hostiles on Grand River, endeavoring to effect the other conditions required of the Utes by the honorable Secretary of the Interior, who is primarily responsible for the entire management of the whole case. I certainly applaud the courage and energy thus far displayed by General Adams, and hope he will fully and completely succeed in his praiseworthy mission, and yet believe that prudence demands that military preparations and precautions shall

not slacken. Thus far we have lost eleven citizens, two officers, and twelve soldiers killed, and 41 wounded. The Indians admit a loss of 39 warriors killed, so that they have not much reason to boast.

It so happened that about the same time some of the Apaches who belonged to the Mescalero Agency, near Fort Stanton, New Mexico, more than six hundred miles south of White River, began a raid upon the ranches and settlements in Southern New Mexico. Major Morrow, of the Ninth Cavalry, is now in pursuit of these Indians, and has subject to his orders about 450 men, but is beyond the reach of the telegraph, so I am unable to give anything definite from him; but these Apaches have no connection whatever with the Utes, have always been restless and mischievous, and only resort to agencies to rest, recuperate, and make ready for the next war. I infer that as soon as winter comes they will return to their agency and be "good."

In the Military Division of the Pacific there are many Indians, most of whom are located on small reservations, so that outbreaks are rare; still in the Department of the Columbia and in Arizona there remain some tribes that are liable to break out at any moment, by reason of the rapid settlements, especially in the upper valley of the Columbia and at the San Carlos Reservation of Arizona. The reports of Generals McDowell and Howard, and of Colonel Willcox, are so full and satisfactory that I need only say that their efforts, supported by their active troops, have maintained a comparative state of peace throughout the past year, and there is good reason to hope that this condition of affairs will have a long duration.

I certainly will approve any action which will improve the habitations and barracks at the remote stations in which our troops are quartered. These are of the most indifferent kind, especially in Southeast Arizona; but the recent extension of the Southern Pacific Railroad will soon enable the quartermasters to transport lumber, brick, &c., so as to convert the present dirty "*Jacals*" into neat and not costly frame buildings. This railroad is now completed from San Francisco to Casas Grandes, about two hundred miles east of Fort Yuma, and I have assurances that it will be extended during this year about eighty miles further to Tucson. At the same time the Atchison, Topeka and Santa Fé Railroad is completed to Las Vegas, N. Mex., and is being pushed toward Albuquerque and Socorro. I do believe the military interests of Arizona will justify the grant of material aid to these railway companies so as to close the existing gap between the two ends and thus complete another trans-continental railroad from the East to San Francisco, via Tucson, Fort Yuma, and Los Angeles. Such a railroad would accomplish more for the settlement of New Mexico and Arizona than any other single enterprise.

#### MILITARY EDUCATION.

Steam and electricity have brought all parts of the earth into such close relations that we are forced into rivalry with foreign nations in the matter of military education and training, and I believe we have no reason to shrink from the comparison. Whilst other nations claim superiority in military affairs, by reason of larger establishments and greater experience, it so happens that modern guns and breech-loading rifles have, in late years, almost revolutionized the equipment and tactics of armies, and we are fortunately encumbered with but few old prejudices to be unlearned, and are free to adopt what is excellent among the discoveries and improvements of every land. Our Army is small and intended to be a school of instruction, yet it is necessarily divided up

into small garrisons and is so constantly employed in building new posts and cantonments; in making roads, and in other manual labor, that from personal inspection and the reports of inspectors-general, I fear that less time is given to drills and professional instruction than should be the case. This makes more important the theoretical and practical education of the Military Academy at West Point, and of the Artillery School at Fortress Monroe. Therefore I invite special attention to the reports of their Superintendents, Major-General Schofield and Colonel Getty. These institutions are admirably conducted and will compare favorably with similar colleges in Europe, but, as General Schofield well remarks, young graduates are too apt to regard their education as complete when they leave the Academy, whereas, like workmen, they have simply acquired the rudiments and a knowledge of their tools. A post graduate course, or schools of application are needed, of which the Artillery School is a sample, but this is necessarily limited to the few officers and men of that arm of the service who can be spared from their legitimate duties.

Similar schools should be established and maintained for the cavalry and infantry. These have repeatedly been attempted at Forts Leavenworth and Snelling, but no sooner have they been begun than some Indian outbreak has imperatively called away the troops, so that at this time we have nothing of the kind. Books, magazines, and pamphlets in limited quantities are now supplied to each permanent post by the Quartermaster's Department, and every possible encouragement in the way of study, of practice, and observation has been and will be given the troops; but the day must come when schools for infantry and for cavalry will be established, in the nature of a post graduate course, and if possible for instruction in the use of the rifle and the horse before young officers and recruits are pushed into battle and danger. The reports of Generals Hancock and McDowell show that our officers and men have made great progress in rifle-practice, which should be encouraged, and the recent publications of Lieutenant-Colonel Upton, "Armies of Asia and Europe," and of Lieut. F. V. Greene, "Russian Campaigns in Turkey, 1877-'78," show that the Army possesses young officers who study and keep in the foreground of military knowledge.

I also invite attention to the remarks of General Schofield when treating of the modern practice of members of Congress selecting cadets by means of a competitive examination:

This method of selection is highly beneficial. It is, however, liable to one source of injury against which it is important to guard, especially since the method of selection seems likely to become very general, if not universal. While the member of Congress is relieved by this means from the very difficult task of selecting a candidate who shall certainly possess the requisite mental and physical qualifications his responsibility still remains for the moral character of his nominee. Good character and manly deportment are certainly no less important than scholarship and physical health. Bad habits contracted by a young man already twenty or twenty-one years of age are not easily corrected, and they are more likely than any lack of mental ability to bring mortification and disappointment to those who are most interested in his honorable career. If manly character, mental ability, and scholarship can all be given their due weight in the competition for appointments, then only unmingled good may be expected from this method of selection.

Every member of Congress will recognize the truth of this statement, and can instruct the committee appointed by himself to include "moral and manly character" into the scale of excellence for his own guidance.

I also invite attention to his report on the importance and general economy of educating each year at West Point a number of cadets "for the militia of the United States." Should Congress entertain such a proposition I earnestly recommend that each of the thirty military col-

leges now equitably distributed and provided by law with an Army officer as "Professor of the Military Art," be permitted to nominate one cadet each year. I am convinced that such a boon would stimulate these colleges and provide some of the very best possible candidates for the National Military Academy. The average loss to the Army in officers by death, retirement, resignation, and dismissal amounts to about 3 per cent., or sixty per year. With thirty cadets added to each fourth class the number of graduates would average about seventy-five or eighty, and assuming sixty as the annual number needed for the existing national military establishment, we would have about twenty young graduates to be returned annually to their respective States, who would be most useful as instructors for the volunteers and militia. I doubt whether this increase of the corps of cadets would add 10 per cent. to the usual appropriation, and yet the result would be inestimable.

In conclusion, I beg to submit the annual reports of the Adjutant-General and of the Inspector-General of the Army, inviting attention to their several recommendations, and to these I add the reports of Inspectors-General Sackett and Schriver, because they did not come to me in their usual connection with the reports of the general officers on whose staff they were serving, where they properly belong.

I have the honor to be, your obedient servant,

W. T. SHERMAN,  
*General.*

Hon. GEO. W. McCRARY,  
*Secretary of War.*

## REPORT OF THE ADJUTANT-GENERAL.

HEADQUARTERS OF THE ARMY,  
ADJUTANT-GENERAL'S OFFICE,  
Washington, October 20, 1879.

GENERAL: I have the honor to submit the following annual returns for Congress:

- Table A.—Organization of the Regular Army.
- B.—Return showing actual strength of the Regular Army.
- C.—Distribution of troops in the Departments of Missouri, Texas, Platte, and Dakota, Division of the Missouri.
- D.—Distribution of troops in the Departments of the East and South, Division of the Atlantic.
- E.—Distribution of troops in the Departments of California, the Columbia, and Arizona, Division of the Pacific.
- F.—Department of West Point.
- G.—Statement of the number of desertions during fiscal year ending June 30, 1879.
- H.—Statement of the number of minors discharged from October 1, 1878, to October 1, 1879.
- I.—Statement of casualties, enlistments, and re-enlistments during the fiscal year ending June 30, 1879.
- K.—Statement of number of patients admitted to the Government Hospital for the Insane from October 1, 1878, to October 1, 1879.

The following is the report upon the recruiting service during the past year:

The depots for infantry at David's Island, New York Harbor, and

Columbus Barracks, Ohio, and for cavalry, at Jefferson Barracks, Missouri, have been efficiently maintained, and the locations recently established at those points have proved suitable.

As many rendezvous have been maintained at the most productive points as the extent of the appropriation would admit.

At David's Island it is of pressing importance that additional buildings, and those of a permanent nature, should be provided as soon as practicable. As will be seen by the last annual report, only a few buildings of wood could be erected to house the men after the hasty transfer of the depot from Governor's Island. These are not only inadequate to accommodate the number of men often collected for distribution to regiments, but they are not of the permanent and comfortable character which ought to be erected at a post likely to be maintained for many years. The estimates, accompanied by plans, which will be submitted for appropriate buildings may seem large, but it is believed they will not be found unnecessary or unreasonable.

The system of recruiting maintained for the past few years continues, as reports from the Army show, to be productive of good results. High commendation is given to the character of men generally composing the rank and file. Making due allowance for the fact that want of employment in civil life has induced a better class of men to enlist, there can be no doubt that the care exerted to cause the rejection of unworthy applicants has also had its influence.

At the cavalry depot there are now some few horses fit for exercise in that branch. But the need which is constantly arising for drafting detachments to fill the companies in active or frontier service prevents the detention of recruits long enough in depot to give them even the rudiments of drill as soldiers. In the cavalry service the sending of raw recruits to join companies actually in march is poor economy. Men thus initiated, if not totally worthless from their ignorance of the care and management of horses, can rarely make really good soldiers. Just after the close of the war there existed for a short time a law which enabled the President to keep under instruction in depot three thousand recruits in excess of the Army organization. With this latitude training schools for material for non-commissioned officers were established, and all recruits were taught duties of sentinel and practice in firing, besides the principles of the march, before they joined their companies. Enough was shown of the experiment during the brief period before the law was repealed to demonstrate its beneficial effect on Army discipline and its economical saving in the way of desertion and dishonorable discharge.

Moreover, when the Army is so straightly limited to 25,000 enlisted men, casualties occur at distant posts, the report of which is not received for some time after they occur. It is thus impossible to keep the companies up to the full standard without overrunning the legal number allowed for the whole Army, for the recruits in depot have also to be counted in that number.

In view of these facts, it is greatly to be desired that provision should be made for even one thousand recruits in excess of the standard. Even with this provision it is calculated that there would rarely be in the Army under pay more than 25,000 at any one time.

The number of discharges is somewhat greater than it would otherwise be from the fact that many old soldiers having families have sought to take advantage of any opportunity that might arise to obtain work in civil life, in view of the recent act which forbids women to accompany the troops. It is a question whether the act referred to will really promote the economy or efficiency of the Army. The appointment of



addresses was entirely in the hands of company commanders—four to an ordinary-sized company—allowed by regulations. They could, if they deemed best, refuse to recognize an address. The effect of the law thus far has been to give service some most worthy old soldiers, with respectable influence in garrison could not be injurious. The act does not check the marrying of soldiers without consent of officers, and the fact of being married is often made a pretense for discharge before expiration of enlistment. When this is the case the soldier becomes restless and discontented.

Recruits for the general service are under the supervision of the permanent general recruiting service, whose headquarters are in New York City.

Recruiting has been maintained during the past year at Boston, New York, Harrisburg, Baltimore, Washington, Cincinnati, Buffalo, Chicago, and Indianapolis. There is also a rendezvous at New York, but recruiting has been suspended there for the present, as a necessary measure, during the prevalence of yellow fever. The Twenty-fourth Infantry, at Nashville, was also closed for the season. A rendezvous for the Twenty-fifth Infantry was held during a portion of the year, but was closed owing to the want of the recruiting fund.

The colored infantry regiments are enlisted by the officers of the permanent recruiting service.

Recruiting depots and depots for the mounted recruiting service are at Jefferson Barracks, Missouri, and rendezvous at Boston, New York, Cincinnati, Buffalo, Chicago, and Saint Louis have been maintained during the past year, except during a short interval, when it was necessary to close some of the rendezvous in order to keep within the limit of the appropriation. The officers of this service also recruit for colored cavalry.

Recruits for organizations in the Department of Texas have been obtained with fair success at San Antonio, Tex., during the past year, and is still in operation.

Recruiting in the Military Division of the Pacific is conducted under the supervision of the division commander. The rendezvous at San Francisco have been in operation during the past year, and several military depots have also been designated as recruiting stations, but the personnel are insufficient to maintain the organizations in that part of the country at their proper standard.

Recruiting depots and rendezvous were inspected by Col. R. C. Baker, adjutant-general, U. S. Army, under instructions conferred by the Adjutant-General's Office, October 31, 1878, viz: at Columbus Barracks, Ohio, and Jefferson Barracks, Missouri; rendezvous at Buffalo, N. Y.; Cincinnati, Ohio; Chicago, Ill.; Indianapolis, Ind.; New York City, N. Y.; and New Orleans, La.

Report submitted.

E. D. TOWNSEND,  
*Adjutant-General.*

T. SHERMAN,  
*United States Army.*



## REPORT OF THE INSPECTOR-GENERAL.

HEADQUARTERS ARMY OF THE UNITED STATES,  
INSPECTOR-GENERAL'S OFFICE,  
*Washington, D. C., October 20, 1879.*

SIR: I have the honor to report that during the past year the officers of the Inspector-General's Department have been stationed and employed as follows, namely:

The undersigned has been in charge of the office at these headquarters, occupied in the various duties pertaining thereto. He has also made special investigations under the orders of the Secretary of War, served as a member of the "Stanley-Hazen court-martial," inspected the accounts of certain disbursing-officers, and made the quarterly inspections of Fort Leavenworth Military Prison, as required by section 1348, Revised Statutes.

Inspector-General Delos B. Sacket has been on duty at the headquarters Military Division of the Missouri. He has been engaged in making numerous investigations and special inspections under the orders of the Lieutenant-General commanding, inspections of national cemeteries and of the accounts of disbursing-officers in the division, not under the orders of the division commander.

Inspector-General Edmund Schriver has been stationed at the headquarters Military Division of the Pacific, under the orders of the major-general commanding, and has also served as president of the board of officers appointed to review the proceedings of the "Hammond court-martial."

Inspector-General Nelson H. Davis has been stationed during the year at the headquarters Military Division of the Atlantic, and has been engaged in making numerous investigations and inspections under the orders of the major-general commanding.

Assistant Inspector-General Roger Jones has continued on duty in this office as my assistant, and, in addition to his regular current duties, has made several investigations and inspections under the orders of the Secretary of War.

Assistant Inspector-General Absalom Baird has during the year been serving at the headquarters Military Division of the Missouri, and has been actively engaged in making inspections, and upon other duty under the orders of the Lieutenant-General commanding.

Assistant Inspector-General Elisha H. Ludington, having been found, by an Army retiring-board, incapacitated for active duty on account of disability incident to the service, was, by direction of the President, by Special Orders No. 74, Adjutant-General's Office, March 27, 1879, retired from active service in conformity to section 1251, Revised Statutes.

The following-named officers have been on duty as acting assistant inspectors-general in the different departments since my last annual report, namely:

Lieut. Col. John S. Mason, Fourth Infantry, in Department of Texas.

Lieut. Col. William B. Royall, Third Cavalry, in Department of the Platte.

Maj. James Biddle, Sixth Cavalry, in Department of Arizona.

Maj. Richard Arnold, Fifth Artillery, in Department of the East.

Maj. Edwin C. Mason, Twenty-first Infantry, in Department of the Columbia.

Captain George B. Russell, Ninth Infantry, in Department of the South.

Maj. John J. Coppinger, Tenth Infantry, was, by Special Orders No. 162, Adjutant-General's Office, July 12, 1879, assigned to duty as acting assistant inspector-general Department of the Missouri, in which capacity he has served since that date.

Col. John Gibbon, Seventh Infantry, was, by Special Orders No. 88, Department of Dakota, July 30, 1878, placed in charge of the Inspector-General's Office at those headquarters, and has recently inspected most of the posts in that Department.

The above-mentioned officers have been engaged in inspection duty, under the orders of their respective department commanders.

Careful examinations have been made, in compliance with the requirements of the act of Congress approved April 20, 1874, of the accounts of all officers of the Army who have disbursed public money during the year. The funds received and expended by the disbursing-officers, with the balances reported by them as due the United States, have been compared and verified by official statements obtained from the Treasury Department and designated depositories.

The reports of these inspections are herewith submitted, ready for transmittal to Congress, as required by the law above referred to.

The annual inspections of National Cemeteries, which, under the provisions of General Orders No. 68, Adjutant-General's Office, July 26, 1876, were required to be made by officers of the Inspector-General's Department, in the course of their tours of inspection, were commenced and continued for this year until the issuance of General Orders No. 61, Adjutant-General's Office, June 18, 1879, which directs that such inspections be dispensed with.

Attention is invited to the custom, believed to be quite common, which makes company commanders, when not serving in the field, the custodians of unnecessarily large quantities of ammunition and sometimes of equipage. The effect of this custom is to incumber the company with unnecessary baggage when required to move, and to make company commanders perform the duties of storekeepers; a duty incompatible with their legitimate functions, and one calculated to impair their efficiency.

In the judgment of the undersigned, the property responsibility of company commanders should at all times be kept as low as possible; and, at all posts remote from depots and arsenals, the necessary supplies of ammunition, equipage, &c., should be kept on hand, in charge of the post quartermaster and ordnance officer, or, in the absence of the latter, in charge of the post commander, as required by paragraph 1420, Army Regulations of 1863, and subject to issue on the orders of the commanding officer.

The past year has been characterized by a marked improvement in the skill of enlisted men in the use of their arms; and it appears, from the inspection reports, that great interest in the acquisition of this important knowledge has been awakened and fostered in nearly every section of the country, and is especially participated in by both officers and soldiers of the Army. This highly important branch of the soldier's practical instruction should be continued to the fullest extent that the appropriations will allow.

During the year, all the barracks, dormitories, workshops, and other buildings pertaining to the military prison at Fort Leavenworth have been completed, exclusively by convict labor, in the most substantial and workmanlike manner, with stone and brick walls, and slate roofs. The barracks and dormitories are roomy and well ventilated, with abundant air space.

The affairs of the establishment are well conducted under the immediate charge of Capt. A. P. Blunt, assistant quartermaster, and supervised by the department commander, General Pope. The convicts are properly disciplined and employed, while they are well fed and treated with humanity and kindness.

The machinery for the manufacture of shoes and boots is ready for operation, and will easily supply all required by the troops.

As the scheme of manufacturing certain army supplies has now been in operation for considerable time at the prison; and as the results already achieved have established, beyond question, the entire feasibility and economy of the experiment, as well as its beneficence in conducting to the health of the convicts, and instructing them in mechanical occupations that will tend to make them more useful and better citizens when they are released from confinement; and as the buildings afford ample room for extending mechanical work, I very respectfully recommend that measures be inaugurated for the fabrication of other Army supplies, which are now obtained from civilian contractors; and, by thus gradually adding to the articles manufactured here, the establishment will, in time, become nearly, if not altogether, self-sustaining.

The number of prisoners confined in the prison at the date of my last inspection, September 11, 1879, with the character of their offenses, were as follows:

For desertion .....	278
For violation 62d Article of War .....	41
For theft .....	12
For mutiny and mutinous conduct .....	6
For assault with intent to kill .....	2
Total .....	339

The diminished strength of the companies in the artillery and infantry arms of service, the great dispersion of the troops, and the consequent small garrisons at most of our military posts, with the constant work devolving upon them in building and repairing quarters, and other labor outside of their military duties, have, for the most part, rendered it impracticable to give sufficient instruction in battalion drills or other military exercises, yet a good state of discipline has generally been maintained, and the officers have done all in their power to insure proper instruction; but, owing to the diminutive garrisons, their efforts in this direction have for the most part been thwarted.

As an evidence of this, the last inspection reports made in the Department of the East show that thirteen of the twenty garrisoned posts in that department had, at those dates, an aggregate of only 298 enlisted men, or an average of 23 men to each garrison.

Copies of the annual reports of the inspecting officers for the past year, so far as they have been received, are herewith transmitted. They contain much important information regarding the affairs of the Army, and valuable suggestions regarding modifications in certain details of the service, which are respectfully recommended to favorable consideration.

The attention of the General of the Army is especially invited to the facts presented in Inspector-General Sacket's report upon the subject of extra-duty men, and their lack of instruction in soldierly duties at many military posts. Without instruction in military exercises and in the use of their arms and accouterments, they would be of little use in active field service, and unless company commanders are permitted and required to give such instruction, they cannot, as the Inspector-General



says, be held responsible for the discipline and military appearance of their men.

I also beg to ask attention to Inspector-General Sacket's and Davis's remarks regarding the difficulty they have experienced in procuring clerical aid in the performance of their duties. Reports from other Inspectors-General have, from time to time, exhibited the same lack of clerical assistance, and they have often been obliged to perform all their own writing in making their inspections, reports, keeping up their records, &c. This does not appear to the undersigned a proper status upon which to place the officers of this department, who have the rank of colonels and lieutenant-colonels, especially when all officers of every other staff department, even captains, are provided with clerks.

Personal observation, covering a period of many years, has satisfied me that there are no staff-officers who more need clerical assistance, at all times, than those of this department; but it is especially the case when in the field with troops or on tours of inspection that the services of competent and faithful clerks are most essential.

In view of these considerations, I very respectfully suggest that the Quartermaster-General be instructed to embrace in his annual estimates an item of \$6,000 for payment of five first-class clerks for the three colonels and the two lieutenant-colonels of the Inspector-General's Department.

I also solicit careful attention to Inspector-General Davis's excellent report herewith submitted. The facts therein presented upon the subject of target practice with rifle muskets during the past year, and the gratifying results attained as exhibited by him, will be found of great interest to all military men.

It appears that the scores made by the "Army teams" during the recent "International Military Match," at Creedmoor, L. I., were eminently creditable, the twelve best shots tying the leading team; and it is reported by Captain Litchfield, commanding the Atlantic team, that in previous practice this team made a better score than that which took the prize at the International Match.

The following extract from this officer's report, giving the results of the practice of the Atlantic team, will doubtless be read with interest:

\* \* \* The result is highly encouraging when it is remembered that the State teams were composed admittedly of the best veteran military marksmen in the world, thoroughly organized as a team in every particular, and using most perfect weapons and ammunition.

Although the Army teams, from lack of opportunity and organization beforehand, must yield the palm this year to the veteran team of the Empire State, without doubt the equal of any ever organized, the fact remains patent that in individual marksmanship, which is the real measure of merit in the soldier, the superiority of our riflemen cannot now be questioned.

\* \* \* Among the prizes won by the officers and men of the division during the meeting, especial notice is invited to the Great Gold Medal won by Sergeant Blue, Tenth Infantry; the "Military Championship" Gold Badge, by Lieut. G. N. Whistler, Fifth Artillery; and the second prize in the "International Military Match," for the highest aggregate score by any competitor from the United States Army, won by Second Lieut. Thomas J. Clay, Tenth Infantry.

Colonel Davis's recommendations upon this and other subjects are the results of matured experience and careful consideration.

In conclusion, it affords me much gratification to be able to give attestation to the fact, that the inspection reports for the past year show conclusively that the officers of the Army are habitually temperate, and not addicted to gaming or other vicious habits.

The rank and file are enlisted from much more respectable classes than I have ever before known during forty-seven years military service; and the troops generally have evinced a most commendable spirit of emula-

tion in the correct performance of their arduous service in garrison and in the field.

Respectfully submitted.

R. B. MARCY,  
*Brigadier and Inspector-General.*

The ADJUTANT-GENERAL,  
*United States Army.*

### 1.—REPORT OF LIEUTENANT-GENERAL SHERIDAN.

HEADQUARTERS MILITARY DIVISION OF THE MISSOURI,  
*Chicago, Ill., October 22, 1879.*

GENERAL: I have the honor to submit herewith, for the information of the General of the Army, the following report of operations within the limits of my command since October 25, 1878, the date of my last annual report.

The organization of the division remains unchanged and consists of the following departments: The Department of Dakota, which comprises the State of Minnesota and Territories of Montana and Dakota, and is garrisoned by twenty-one permanent posts and four temporary encampments, commanded by Brig. Gen. Alfred H. Terry; the Department of the Platte, consisting of the States of Iowa and Nebraska and the Territories of Wyoming and Utah and a portion of Idaho, garrisoned by seventeen permanent posts, commanded by Brig. Gen. George Crook; the Department of the Missouri, consisting of the States of Illinois, Missouri, Kansas, and Colorado, the Indian and New Mexican Territories, and two posts in Texas, Forts Elliott and Bliss, garrisoned by twenty permanent posts and eight encampments, commanded by Brig. Gen. John Pope; and the Department of Texas, consisting of the State of Texas, which embraces the Mexican frontier, garrisoned by thirteen permanent posts and ten encampments, commanded by Brig. Gen. E. O. C. Ord.

In my last annual report, I called attention to the fact that our forces were too small to properly perform the duties incumbent upon them throughout the vast extent of territory they occupied. The ratio of the force was one man to every seventy-five square miles in the Departments of the Platte, Dakota, and the Missouri; and one man to every one hundred and twenty square miles in the Department of Texas, and there has been no change in that respect up to this time.

The forces of the division are assigned to the several departments as follows: In the Department of Dakota, officers and men, cavalry, 1,538; infantry, 3,649. In the Department of the Platte, cavalry, 1,463; infantry, 1,525. In the Department of the Missouri, cavalry, 1,269; infantry, 2,081. In the Department of Texas, cavalry, 1,817; infantry, 1,787; artillery, 188. The number of permanent posts in the division is seventy-one, which, together with twenty-two temporary encampments, has given us an aggregate of ninety-three stations to provide for during the summer. These posts have been garrisoned by eight regiments of cavalry, aggregating 6,087; four companies of artillery, with an aggregate of 188; nineteen regiments of infantry, with an aggregate of 9,042, and 200 Indian scouts; making a grand total of 15,517 officers and men.

For the details of the various Indian troubles and movements of

Throughout the division, I refer you to the accompanying reports of the regiment commanders.

Report of General Terry, commanding the Department of Dakota, is comprehensive, and fully describes the operations in his department, especially the expedition of Colonel Miles and the beneficial effects of it, to which I wish to add a just commendation, by saying that Colonel Miles, in the organization of his column and in his soldierly conduct, has given satisfaction to his superiors, and inspired confidence in his officers and men under his command. When the buffalo again range north of the northern boundary line, they will be followed by the living north of that line, or at least by their hunting parties. The Indians are dependent for their main supplies of animal food on the buffalo herd, and it will be exceedingly difficult to establish international conditions which will prevent such an invasion of the country. The number of Indians dependent upon these herds for food aggregate many thousands. I therefore concur with General Terry in his recommendation for the establishment of another large post about midway between Forts Buford and Assinaboine, on the northern boundary line as the local conditions will require. I recommend that an appropriation of \$200,000 be asked for the construction. The rapid progress of the Northern Pacific Railroad up the Northwest with hardy pioneers and emigrants, and the settlement of this new post should take place during the summer.

Report of General Crook illustrates the condition of affairs in his department. The reference which he makes to the Camp Robinson prisoners, I wish to supplement with the remark, that it is to be regretted that the small number of troops then available did not admit of a larger force at that place at the time of the outbreak, as it might by then have sufficiently intimidated the determined and sanguinary warriors who were there confined. It is useless for me to speak of the grievances of these Indians; they belong to a system which has existed for many years. It is enough for me to say that the "poor fellow" sustained his cruel nature by making a breastwork of his children in resistance to the orders which sent him back to his reservation where he alleges he was pinched with hunger and his people suffering from fever arising from certain climatic conditions of the country. In what occurred at Camp Robinson the troops had no responsibility, but had to obey orders originating in requests from the Department, and the only thing to be regretted is that the occurrence might have been avoided had we had an overwhelming force; but we had not. It is also to be deplored that the most lawless band of Northern Cheyennes which escaped about the same time has not been punished. They murdered men, women, and children, and have gone free, and this circumstance will be likely to encourage to these and other Indians at some future time the same thing.

In the Department of the Missouri much trouble was occasioned by the recent invasion of the Indian Territory by squatters, but the action of the President of the United States in giving full authority to the troops to act has resulted in putting a stop for the present to the restless adventurers, and we hope very soon to clear the Territory of another class of desperate characters, who for a long period have made life and property insecure there.

In Mexico, a band of Apaches, under the Chief Victoria, broke up their reservation, to which they had gone reluctantly, and

the result has been bloodshed, expense, and anxiety. They have killed five soldiers, two scouts, and fifteen or sixteen citizens, including one if not more families of women and children, but to some extent have already been punished by the troops who are still in pursuit. The most recent information from New Mexico, though not yet officially confirmed, goes to show that great destruction to life and damage to property has been committed in the Mesilla Valley by these same Indians, although they are constantly and energetically pursued by our troops. Their tactics being to attack and plunder some given point, then to scatter like quails, and meet again at some other distant point previously understood, for plunder, and again scatter, therefore it is exceedingly difficult for our troops to overtake and punish them. At present, however, the prospect looks fair that they will soon be overtaken and killed or captured.

The recent and unexpected outbreak of the Utes at the White River Agency seems to have been brought about, as far as I can ascertain, by local causes. The Indian agent wished them to engage in farming, and many of them were uncompromisingly hostile to anything in the way of labor which might assist in making them self-supporting. As soon as a knowledge of the trouble was communicated by the Indian Bureau to the military authorities, a force which was deemed more than sufficient by the agent was sent from the nearest post, under command of Major Thornburgh, Fourth Infantry. Before the troops reached the agency, the agent, Mr. Meeker, and most of his employés, were murdered by the Indians, who then came out and attacked Major Thornburgh's force at a point eighteen miles distant from the agency, killing Major Thornburgh and twelve of his men and wounding forty-two others, officers and men. The ground selected by the Indians for this attack was exceedingly favorable to them, and they succeeded in beleaguering the command and held it until it was relieved by Colonel Merritt's command, which was thrown forward with great rapidity to its rescue. The troops under Colonel Merritt then pushed on to the agency without opposition, where they discovered the dead bodies of the agent and his employés. At present a large column of troops is held at White River Agency, another large column is being organized at Fort Garland, and still another in the Animas Valley, pending the action of the Indian Bureau, through its special agent, General Adams; and these troops will be held at these points, awaiting the result of General Adams' negotiations with Chief Ouray for the surrender of the murderers.

The report of Brigadier-General Ord gives a full and interesting account of the status of affairs in his department for the past year.

Nearly all the vexatious conditions which have heretofore existed along the Rio Grande—the boundary line between our country and the Republic of Mexico—have ceased, owing to the active efforts of our own troops and those of the Mexican Government; an earnest and generally successful effort having been made upon both sides of the line to capture and destroy all raiding parties. Small parties of Indians occasionally succeed in evading the troops, and commit robberies and outrages upon the outlying settlements and mail routes; some of these parties at times entering Mexico from our side and others coming from that country into this. It has been pretty well established that most of the raids made by our Indians have their origin on the Fort Stanton Indian Reservation. I have repeatedly called the attention of the authorities to this fact and to the impossibility of stopping them, unless the reservation is placed directly under the control of the military; when, I am satisfied, we would be able to put an end to them.



It will be seen from General Ord's report that the troops in his department have been very active, having marched over 40,000 miles on scouts and in following the trails of raiding parties; and much of the good order which has obtained on the Rio Grande is undoubtedly owing to the energetic movements and general activity of the troops.

There has been no general combination of hostile Indians in this military division during the past year, and I doubt that such combinations can ever again exist. The continuous settlements of the valleys of the Arkansas, the Smoky Hill, the Platte, the Black Hills, and the valley of the Yellowstone; and the construction of the Union Pacific, the Kansas Pacific, the Atchison, Topeka and Santa Fé, and the Northern Pacific Railroads, and their natural connections, following the Indian wars of 1868 and 1876, has thrown too many obstacles in the way for Indian runners to communicate intelligence among the various tribes; and, in addition to this, the great southern buffalo herds, together with the elk, antelope, and deer, upon which they depended to subsist their warriors, are now nearly gone. Therefore, Indian troubles that will hereafter occur will be those which arise upon the different Indian reservations, or from attempts made to reduce the number and size of these reservations, by the concentration of the Indian tribes; and I think I can safely say, in the nature of a warning to the government, that there is great danger at all the agencies of wild Indians where a sufficient military force is not present of scenes occurring similar to those recently enacted at the White River Agency.

Many complaints have been forwarded to the War Department through these headquarters since my last report, showing that there has been an insufficiency of food at some of the Indian agencies within this military division; and hunger will always produce trouble. I have heretofore reported, and desire to reiterate my former statements, that at least the beef ration now allowed the Indians is insufficient, and I believe this may arise from inadequate appropriations made by Congress for this purpose. It should be borne in mind that the vast country lying between the Missouri River and the Rocky Mountains, including Colorado and a portion of New Mexico, has been wrested from the Indians, and that the immense herds of game upon which these Indians formerly subsisted have to a great extent disappeared, and that nearly all the country mentioned is now given up to mining interests, cattle ranches, and general agriculture, and that the annual market value of the mineral and food supplies of this region aggregates hundreds of millions of dollars. It seems to me that such beneficial results as these should induce Congress to furnish the poor people from whom this country has been taken with sufficient food to enable them to live without suffering the pangs of hunger. It should also be remembered that the Indian possesses a nomadic stomach, and heretofore, simply by the pleasures of the chase, he was enabled to put his family beyond the possibility of a want of food; and one can easily imagine how exasperating it must be to a warrior to find himself limited to a meager ration of Texas beef and to see his women and children suffering for food before his eyes.

There is one other source of trouble that I desire to allude to, and that is the removal of the Indians from the localities in which they were born and reared. I have never known it to be done without producing trouble. The Indian is deeply attached to his place of birth, and he never abandons it except under compulsion, and when that occurs, and his removal is accomplished, it is invariably followed by a home-sickness which is so intense that it frequently terminates fatally. I have no doubt but that the ground-work of the present Colorado trouble arises



from a suspicion on the part of the Indians that they are to be deprived of their homes by a concentration in order to make fewer agencies.

It should not be forgotten that there is no established system of government among Indians for the punishment of crime, and the little influence possessed by their chiefs is entirely disregarded whenever in the opinion of the individual Indian his present safety or other interests are threatened; and among communities so loosely governed, composed of men so wild and savage in their nature, we must as a natural sequence expect to be occasionally startled by some most sanguinary outbreaks.

There should always be some power to control or punish. We cannot govern highly civilized communities without at least the force of law to guide and even punish, and much less ought we to expect to control wild Indians without a force to compel obedience to such rules as may be wisely established by the proper authorities for their benefit.

The supply departments throughout the division have worked well and economically, and the officers in control of this important branch of the service are entitled to credit for their services.

The department commanders have faithfully performed their duties, and the line and staff have all done well.

I have the honor to be, General, very respectfully, your obedient servant,

P. H. SHERIDAN,  
*Lieutenant-General, Commanding.*

Brig. Gen. E. A. TOWNSEND,  
*Adjutant-General of the Army, Washington, D. C.*

## REPORT OF BRIG. GEN. ALFRED H. TERRY.

HEADQUARTERS DEPARTMENT of DAKOTA,  
*Saint Paul, Minn., October 1, 1879.*

SIR: I have the honor to submit the following report of the military operations which have taken place in this department during the past year:

\* \* \* \* \*

The following is a general "record of events" during the year, taken principally from the post returns:

October 6, 1878, about 9 o'clock a. m., sparks from a prairie fire, in the vicinity of Fort Stevenson, were driven by a violent wind into the corral, totally destroying it and a quantity of coal and wood used for fuel. Only by the most strenuous exertions of the command was the post saved from destruction.

Telegraphic information having been received at these headquarters from the division commander that a body of hostile Cheyenne Indians, numbering about 60 men, with their families, were endeavoring to reach the Old Red Cloud Agency, and were being pursued by troops from the Department of the Missouri, preparations were made in this Department to intercept and capture them, provided they should escape the forces in the Department of the Platte; and orders were immediately issued to the commanding officers of the Seventh Cavalry, Red Cloud, Spotted Tail and Cheyenne Agencies, and Fort Randall, to send out at once sufficient force from their respective commands for this purpose. In pursuance of these orders, on the 6th of October, Companies C and L,

Third Cavalry (2 officers and 105 men), under command of Capt. P. D. Vroom, Third Cavalry, left Red Cloud Agency, Dak., for the purpose of intercepting the hostile Indians.

The command marched southwest to the South Fork of White River, near the crossing of the Randall road, thence east along the Randall road to the second crossing of the South Fork of White River, and thence west in the direction of Wounded Knee Creek. It returned to its post October 21, having discovered no trails nor indications of hostile Indians. The distance marched was 370 miles.

On the 7th of October Capt. H. W. Wessells, jr., with Lieutenant Baxter, Third Cavalry, 22 men of Company M, Third Cavalry, and 14 Indian scouts, left Camp Rains, Dak. (garrison of Spotted Tail Agency), to operate against the hostile Indians. He marched as far west as Flint Butte, 75 miles distant, and scouted the country as far as Wounded Knee Creek, but neither heard nor saw anything of the Cheyennes. Captain Wessells returned to his camp October 15, having marched 148 miles.

Also, on the 7th of October, Col. W. H. Wood, Eleventh Infantry, with Companies A, E, and K of that regiment; Company D, First Infantry, from Fort Sully, and 5 Indian scouts, left Cheyenne Agency to defend the Cheyenne River line against the hostile Indians. The command returned to its post October 24, having discovered no signs of Indians. Distance marched, 154 miles.

October 7, Maj. J. G. Tilford, Seventh Cavalry, with 9 companies of the Seventh Cavalry from Camp J. G. Sturgis and Camp Ruhlen, left the former post to intercept the hostile Cheyennes. The command followed the Harney trail as far as Wounded Knee Creek and scouted to the east and west on White River, but discovered no signs of hostile Indians. The command then proceeded to Camp Sheridan, Nebr., and thoroughly scouted the Sand Hills south and southeast of that place.

October 14, Companies A, E, and I, Second Cavalry, under command of Maj. E. M. Baker, Second Cavalry, left Fort Keogh to prevent hostile Indians from crossing the Yellowstone River.

October 25, Capt. T. J. Gregg, with Lieutenant Swigert and all available men of Companies C, D, and M, Second Cavalry, left Fort Custer *en route* to Rosebud Creek to intercept hostile Indians.

The six companies above mentioned returned under command of Major Baker to their respective posts November 14 and 15.

October 24, companies C, F, and I, Sixth Infantry, under command of Capt. J. W. Powell, jr., Sixth Infantry, left Fort Buford by the steamer General Sherman and proceeded as far as Wolf Point to aid in intercepting the hostile Cheyennes. The command returned October 30.

November 21, Sergeant Whelan, Company F, Seventh Infantry, proceeded from Fort Benton to Sun River, Montana Territory, in search of public animals which had strayed from the post, and returned November 23, having traveled 120 miles.

The abandonment of Fort Rice and the Spotted Tail Agency on the Missouri River was effected, the latter on the 24th and the former on the 25th of November. The garrison of Fort Rice, Company A, Sixth Infantry, was transferred to Fort A. Lincoln, and Companies H and M, Third Cavalry, which had been temporarily stationed at the agency, marched for their respective posts in the Department of the Platte.

In December, Red Cloud Agency was abandoned, and the garrison, Companies E and L, Third Cavalry, marched on the 19th for their posts in the Department of the Platte.

December 23, Second Lieut. F. Thies, Third Infantry, with a detachment

of 11 men of the Third and Seventh Infantry, left Fort Shaw for the North Fork of Sun River in search of Indians reported to be roaming in that vicinity without authority.

In accordance with the provisions of General Orders No. 79, of 1878, from the Headquarters of the Army, the names of certain posts in this department were changed on the 30th day of December, 1878, and were announced in General Orders No. 9, of that year, from Headquarters Military Division of the Missouri, as follows:

The new post near Bear Butte, Dak., to be hereafter known as Fort Meade.

The post at Standing Rock Agency, Dak., to be hereafter known as Fort Yates.

The post at Cheyenne Agency, Dak., to be hereafter known as Fort Bennett.

The post at Lower Brulé Agency, Dak., to be hereafter known as Fort Hale.

Camp Baker, Mont., to be hereafter known as Fort Logan.

February 16, 1879, Company A, Second Cavalry, and Company F, Fifth Infantry, under command of Capt. S. Snyder, Fifth Infantry, left Fort Keogh for Glendive, Mont., there to watch the crossing of the Yellowstone River, and intercept or capture hostile Indians who were reported to be moving in that direction.

February 22, First Lieut. William Krause, Third Infantry, with 6 enlisted men (mounted), left Fort Benton and proceeded to Fort Claggett, Mont., and to the Crow Indian camp in the vicinity of Armell's Creek, Montana Territory, to recover certain horses stolen from British half-breeds by Crow Indians, and to investigate an alleged complaint made by one Henry P. Brooke against certain River Crows of the Belknap Agency, for killing and mutilating his cattle. The detachment returned to its post April 1, having traveled about 300 miles.

February 23 a battalion of the Seventh Cavalry, under command of First Lieut. A. H. Nave, Seventh Cavalry, left Fort Meade for Rapid City, Dak., in pursuit of a band of hostile Indians, who were reported to have attacked wagon-trains and to have committed other depredations in that vicinity. The command discovered no signs of Indians, except a few pony tracks, and returned to its post February 28, having made a thorough scout in that vicinity. Distance marched by Company E, 206 miles; by Company M, 190 miles.

During the month several scouting parties were sent out from Forts Custer and Keogh to intercept hostile Cheyenne Indians (supposed to be Little Wolf's band) who were committing murders and depredations, and to prevent them from passing the Yellowstone. An expedition under command of First Lieut. W. P. Clark, Second Cavalry, left Fort Keogh, on February 22, 1879, to intercept hostile Cheyenne Indians who were moving north after having committed murders and depredations along their route.

February 27, Company F, Sixth Infantry, at the request of Colonel Miles, Fifth Infantry, left Fort Buford and proceeded up the Yellowstone River as far as Gorham's ranch, there to watch the river with a view to intercept hostile Cheyenne Indians endeavoring to escape northward. The company returned to its station March 12.

March 3, Lieut. S. H. Loder, Seventh Infantry, with 14 enlisted men of Companies K, Third Infantry, and D, Seventh Infantry, left Fort Logan in quest of Ten Doy's band of Bannock Indians, to communicate to him and his band the order of the Interior Department for their removal to Fort Hall. Having accomplished the object of the movement



Lieutenant Loder returned to Fort Logan on the 20th of March, having marched 303 miles.

Captains Mix and Gregg, with Lieutenants Huntington and La Point, Second Cavalry, and Companies D and M of that regiment, marched from Fort Custer March 29 in pursuit of hostile Indians, supposed to be Sioux and other northern Indians, who were raiding in the valley of the Yellowstone. The command returned to Fort Custer on the 9th of April, having followed the trail of the hostiles to the Musselshell, where it became obliterated. The troops were then obliged to return to their post for want of supplies. Distance marched, 125 miles.

April 4, Companies H and L, Second Cavalry, left Fort Ellis to scout the Yellowstone Valley to Young's Point, Mont. Acting Assistant Surgeon R. M. Whiteford, U. S. A., accompanied the command.

April 5, Sergeant Kennedy, Signal Service, U. S. A., and Private Baader, Company E, Second Cavalry, acting as guide, while on their way from Powder River telegraph station to Fort Keogh, were suddenly fired upon at Mizpah Creek, where they had stopped at noon, by six ambushed Indians. Private Baader was killed at the first fire. Sergeant Kennedy, in endeavoring to reach his horse, was wounded, but hid himself in the brush. The Indians disappeared and returned at night without finding him. They secured the scalp of Private Baader, the two horses of the party, and one revolver. A party from Deadwood, en route to Fort Keogh, the next day found and brought the wounded sergeant into that post.

Immediately on the arrival of this party at Keogh, Sergt. Thomas B. Glover, Company B, Second Cavalry, with a detachment of 10 men, Company B, Second Cavalry, 2 Sioux and 1 half-breed scout, left Fort Keogh in pursuit of the Indians who had killed Private Baader and wounded Sergeant Kennedy. He was joined on Mizpah Creek by Corporal Richy, Company I, Second Cavalry, 5 enlisted men, and 2 Cheyenne scouts, also sent out from Fort Keogh. The detachments followed the trail, which led in a southwesterly direction, and, on the 9th, passed through three of the abandoned camps of the Indians, which contained portions of soldiers' clothing and horse equipments. On the 10th, after following an almost obliterated trail, the Indians were overtaken and compelled to surrender, delivering up their arms, ammunition, and ponies. The party consisted of 8 persons—3 men, 4 squaws, and 1 child. The detachment returned to Fort Keogh April 12, having marched about 160 miles.

April 6, First Lieut. F. U. Robinson, Second Cavalry, with 20 enlisted men from Company K, Second Cavalry, left Fort Ellis to scout the country between the Gallatin and Musselshell Rivers in pursuit of hostile Indians and so-called "road agents," reported to have stolen stock in that vicinity.

April 10, Lieut. S. H. Loder, Seventh Infantry, with 18 men of Company K, Third Infantry, and Company D, Seventh Infantry, assisted by some Gros Ventre Indians, left Fort Logan in pursuit of hostile Indians roaming in the vicinity of the Musselshell. On Careless Creek the enemy, consisting of 8 Sioux warriors, supposed to belong to Sitting Bull's camp, was overtaken, and, after a sharp fight, which lasted about an hour and a half, all the Indians were killed. The troops sustained no loss. One Gros Ventre Indian was killed and one Gros Ventre chief was wounded. The command returned to Fort Logan April 21, having marched 225 miles.

April 10, First Lieut. William Krause, Third Infantry, with 19 enlisted men and 2 citizen scouts, left Fort Benton to patrol the Missouri River from

that point to the mouth of the Musselshell River. The detachment returned to its post May 7, having traveled about 280 miles.

April 12, First Lieut. George H. Wright, Seventh Infantry, with 3 enlisted men, Second Cavalry, left Fort Ellis as escort to Ten Doys' band of Bannock Indians through the settlements to their reservation and agency at Lemhi, Idaho.

April 15, between 7 and 8 o'clock p. m., the Eighteenth Infantry arrived in Saint Paul *en route* to the new post (Fort Assinaboine) to be established on Beaver Creek, Montana. The regiment left Saint Paul about midnight and arrived in Bismarck on the 17th, where it embarked the same day on the steamers General Sherman, Key West, and Josephine. Two companies were left at the Coal Banks to protect stores and the remaining eight companies arrived at the site of the new post May 9.

April 23, Capt. George L. Tyler, Second Cavalry, with Company F, Second Cavalry, left Fort Ellis to scout the Yellowstone River in the vicinity of Stillwater and establish a temporary camp there, to protect the citizens of that region from hostile Indians and so-called "road agents."

During the month scouting parties were sent out from Forts Missoula, Shaw, and Ellis to scout along the Missoula and Yellowstone Valleys and the country between the Gallatin and Musselshell Rivers and Judith Basin.

May 28, upon the request of the United States Indian agent at the Fort Peck Agency, Poplar River, Montana, Company E, Sixth Infantry, under command of Capt. Thomas Britton, Sixth Infantry, left Fort Buford for that point to prevent a threatened outbreak among the Indians of the agency. Hunger appeared to have been the chief cause of discontent. The company returned to its post July 9.

May 30, Company A, First Infantry, left Fort Randall to escort a party sent out to make a survey of the Rosebud and Pine Ridge Agencies. The company marched on this duty 136 miles.

June 2, First Lieut. J. M. Burns, Seventeenth Infantry, with a detachment of 14 enlisted men of that regiment and one Indian scout, left Fort Sisseton for the James River Valley, to prevent a collision between white settlers and Drifting Goose's band of Sioux Indians. The presence of the troops had the desired effect. The command returned to Fort Sisseton on June 12, having marched about 180 miles.

June 20, Companies A and I, Seventh Infantry, left Fort Shaw under command of Maj. Guido Ilges, and proceeded to Fort Benton, where they were joined by Company D, from Fort Logan, and Company G, from Fort Ellis. The four companies, under the command of Major Ilges, embarked June 30 on board the steamer Benton and proceeded to the mouth of the Musselshell River, where they established a summer camp.

In March last a petition was forwarded by settlers in Southern Montana asking that a summer camp be established at Henry's Lake for their protection against raiding Indians. The locality referred to is in the Department of the Platte; but as it is more easily accessible from Fort Ellis than from any post in that department, I, with the assent of the Lieutenant-General and the commanding general Department of the Platte, caused Company E of the Third Infantry to proceed to the point from Fort Ellis, June 23, and establish the camp as desired.

June 25, in compliance with instructions from Headquarters Military Division of the Missouri, Company I, First Infantry, left Fort Randall to establish a summer camp on the Keya-Paha River for the protection of settlers in Holt County, Nebraska.

Between the 1st and 5th of July a column, under command of Col. N.



A. Miles, Fifth Infantry, marched from Fort Keogh for the purpose of operating against hostile Indians in the country north of the Missouri River.

July 6, Company C, Sixth Infantry, left Fort Buford to take post at supply-camp, Fort Peck, Mont.

On the 19th of July, Lieut. John T. Van Orsdale, Seventh Infantry, with a detachment of 8 men, was sent from the camp on the Musselshell, overtook and engaged a party of hostile Indians who had been raiding in that vicinity, killing one and driving the remainder of the party into the Bad Lands.

Scouting parties were sent out during the month from Forts Shaw, Ellis, Logan, and Sully, and were engaged in patrolling Sun River, the south fork of Smith River in Montana, and the Keya-Paha River in Dakota. No hostile Indians were encountered.

Pursuant to instructions from the General of the Army, on the 1st of August a party, consisting of 2 officers and 50 men of the Third Infantry, under command of Capt. W. H. Penrose, Third Infantry, left Fort Missoula for the purpose of reopening the Mullan wagon-road between Fort Missoula and the post of Cœur d'Alene.

August 28, a tornado passed over Fort Keogh at 4 p. m., blowing down a set of company barracks and damaging many more buildings.

September 3, Company D, Sixth Infantry, under command of Second Lieut. George B. Walker, Sixth Infantry, left Fort Buford as escort to a party of half-breed prisoners, captured by Colonel Miles, and ordered to be sent across the line and set at liberty. The company returned to its station September 14.

September 7, a company of the Eighteenth Infantry left the Coal Banks for Cow Island, where it arrived on the 12th, and established a temporary camp for the protection of public property landed at that point.

The movements of the force under Lieut. W. P. Clark, Second Cavalry, which left Fort Keogh on the 22d of February, for the purpose of capturing Little Wolf's band of hostile Cheyennes, then moving north toward the Yellowstone River with the intention of proceeding to join Sitting Bull, deserves much more than the passing notice which it has received in the foregoing narrative of events. The results obtained were so important, and Lieutenant Clark displayed so much energy and zeal, and such admirable judgment in the conduct of the whole affair, that I should do him injustice were I not to set forth particularly all the details of his operations. This can best be done in his own words, and I therefore embody his report in mine. It is as follows:

IN CAMP, FORT KEOGH, MONT.,

*April 2, 1879.*

SIR: I have the honor to submit the following report in regard to the operations of my command, which secured the capture of Little Wolf's band of Cheyennes, through their surrender on March 25, 1879. On February 22 I was ordered with Companies E and I, Second Cavalry, a detachment of one officer and 20 men and an Artillery squad of one non-commissioned officer and two men, manning a Hotchkiss gun, and four Sioux scouts, to proceed to the vicinity of O'Fallon's Creek, there to establish camp and intercept the hostile Cheyennes. I had for transportation 10 wagons and 40 pack-mules; Sibley tents for the men when with the wagons, shelter-tents when I left them.

The inclosed map exhibits pretty accurately the marches, camps, and scouts made. On my way down I established a picket of one non-commissioned officer and three men on Sheridan Buttes near mouth of Powder River, and after going into camp on Yellowstone near mouth of O'Fallon's Creek, I kept the country actively scouted near head of this creek and also over towards Cabin Creek. I arranged with ranchers and drivers on line of Bismarck and Keogh mail-route to give me promptly any information they might learn.

On February 27, the Yellowstone River suddenly rose some six feet and carried out the ice, though the thermometer had for a day or two previous indicated 33° below zero. This sudden flood compelled me to move to high ground on banks of O'Fallon's Creek.

On March 4, moved back to Powder River for the purpose of crossing rations and forage, the ice having broken in this stream on March 3d, leaving, however, a wide gorge of ice on the banks.

On March 7, two Sioux scouts, with Interpreter Fleury, who had been sent out on Bismarck mail-line from Fort Keogh, reported at my camp, and I detained them with me.

On March 8, I sent two Sioux scouts out to make an extended scout up Powder River to crossing of Black Hills and Keogh road, thence over to the Little Missouri on this road, then to go down this stream, and, if not finding trail before, to scout well towards Slim Buttes. On the 11th they returned to camp at 8 a. m., and reported as having seen some Indians hunting on foot about 50 miles up Powder River. I at once started out three scouts, including one of these who had brought in the report, to go and locate the village and indicate a point at about where I would meet them. Leaving tents standing with a small guard, taking ten days' rations on packs, and as much forage as possible. I left camp at 12 m., and marched out on Bismarck stage-line some 22 miles, which point I reached just at dark; from here I struck off for the pine bluffs and ridges near Powder River, thus crossing a high plateau of rolling prairie where my command could have been seen at a long distance if I had not crossed at night, and went into camp in a well-concealed position at 11 p. m. The night was intensely dark, and for a time rained heavily, making our progress slow and extremely difficult, and but for the Indian scouts we certainly could have done nothing.

The next day we advanced cautiously, keeping concealed well by winding amongst the bluffs, following ravines, &c., and at 4 p. m. met scouts I had sent out to locate the village, and they reported no signs, and I went into camp. During the night it turned suddenly quite cold and snowed some four inches.

Believing no large body of Indians could have escaped observation from the second scouting party, and that some mistake had been made by the first, the next morning I ordered the command to move slowly back on our trail. I took six of the scouts, giving three of them an extra animal and rations, and thoroughly scoured the country adjacent to the point where the hostiles had been reported as having been seen; finding nothing which justified any further retention of the command I sent Interpreter Fleury and two Indians "I had prepared for the trip" forward to complete the scout first ordered to the Little Missouri, &c., and rejoined my command and reached my tents at Powder River on March 14. During the trip some of the men were slightly frosted, but none seriously injured.

On the 17th, I asked for some Cheyenne scouts, and six were sent me, reaching my camp on the 19th. No suitable interpreter was sent with them. I asked to have one sent, but was informed, for misconduct "Seminole," the only one at Keogh, had been discharged, and would not be re-employed. I sent for him to join me at my personal expense, as I deemed it very important and necessary that a perfect understanding should be had with these Cheyenne scouts. I told them of my orders; that I must capture or kill these hostiles; that possibly, by going with me, they could save their kinsfolk; that if I could surprise them and capture their stock, it might open their ears and they would surrender without fighting; if I could not surprise them, then, when I got very close, they could go into the camp, represent the danger of an engagement, the number of troops out after them, the extreme difficulty of crossing the streams to the north, and the indifferent welcome which they would probably receive from the Sioux; that the hostiles had left their agency in the south for reasons which I did not fully understand and could not explain to them; that it was claimed they had committed atrocities along the line of their march, and I knew some whites had been killed by them; that Little Wolf had been an enlisted scout under my command, and I thought would have confidence in any message he might get from me. I also said I had recommended that these hostiles be allowed to go to the Arapahoe Agency, but I could make no promises in regard to it. I could only say, give up ponies and guns, and I would not fight them. That, if after this understanding, they (the Cheyenne scouts) did not feel they could act earnestly in the matter with me, they could go back to the post.

One of the head-men replied that to shoot at these people (the hostiles) would be like going back and firing at the children in his own lodge; the other, Brave Wolf, said that he was a soldier, and though he had kin in the hostile village, he would do as he was ordered. I desired a perfect understanding with these scouts, as I felt they would be the means through which I must, in any event, at first communicate with the hostiles to secure a surrender either before or after a fight, and I hoped to secure a victory without loss of life, keenly appreciating the fact, however, that a victory gained at the expense of deception would indeed be dearly bought. I had just concluded



this talk, or council, when one of the Sioux scouts, who had been sent over to the Little Missouri, came into camp. He told me the hostiles had captured his party on March 20, near mouth of Box Elder Creek; that they had built a little fire to cook coffee, when the grass caught and betrayed them to one of the hostiles who was in the immediate vicinity, and soon they were surrounded and taken into the hostile camp. They fled brilliantly and successfully, and made the hostiles believe they were on their way to Sitting Bull's camp; that they had stolen the government stock, and that they would lead them to a good ford across the Yellowstone, and tell them where they could cross the Missouri, and would make their reception all right with Sitting Bull. The next morning he got one of the hostiles to go out hunting with him, and, at about noon, got away from him, and had ridden fast and hard to bring me the news. He had ridden, in fact, 125 miles in twenty-four hours.

I broke camp at 4 p. m., taking wagons and packs, and marched 22 miles on Bismarck stage-road and went into camp at 11 p. m., and soon after Fleury and the other Sioux scout who had been captured came into camp, having escaped that morning. Fear had also given them good spurs, and they had ridden 90 miles that day.

Believing that the hostiles had at once felt convinced that they had been deceived and would turn back or press hurriedly forward and try and cross the Yellowstone before I could reach them, I left the wagons at this point, and taking eight days' rations and as much forage as possible, on packs, marched 45 miles. The next day I sent three Cheyenne scouts and two Sioux on to learn what they could about the trail and location of the village.

On March 24, after I had made some 35 miles, I met the two Sioux scouts returning. They reported the trail as turning back and recrossing "Hole in the Rock Creek," and that the three Cheyenne scouts had continued on the trail. I went forward about 10 miles and camped on this creek. My scouts told me that the hostiles had undoubtedly become convinced soon after the escape of the prisoners that troops were in the country after them, and were making for a particularly strong place well known to both the Cheyenne and Sioux Indians. This place may possibly be identical with what is put down on the map as "Hole in the Rock," but it appears nearer the mouth of Box Elder Creek.

The next morning I struck an old camp of the hostiles, two days old, after I had marched some three miles, and about two miles further two of my Cheyenne scouts met me, bringing three of the hostiles with them; said they went into the camp during the night, and had delivered my terms, which the hostiles said they would accept. The three Cheyennes brought to me corroborated this statement but desired me to go into camp where I was, and their village would move over and join me; that if I marched up to their camp the women and children might get frightened, and there might be some trouble. I declined, of course, to do anything of this sort, but selected the two head-men Brave Wolf and Two Moon, of my Cheyenne scouts, to ride on ahead and renew briefly, kindly, and firmly my terms, and bring Little Wolf out to meet me as I approached the village with my command.

This the scouts did, and Brave Wolf added to the message in delivering it, "I love the soldiers at Keogh; I go with them to fight all their enemies, and if you will not listen you will force me to fight my own people, for you are my kinsfolk."

Little Wolf met me about half a mile from his camp, and said he would accept the terms offered by my scouts, and that he was glad to meet me again. I marched my command to within one hundred yards of the village, which was in a natural fortress, and they had strengthened it by breastworks of stone and dirt, and put my forces in the next best and strongest position about there, both for their protection and to attack in case there should be any necessity for such a measure. After about an hour, to allow the excitement to wear away and give my Cheyenne scouts time to talk the matter over with them, I went over to the camp, taking off my arms, to show them that I had confidence in them, and briefly told them in council what they must do, as far as I was concerned. That I had told my scouts to give them no lies, and I hoped they had done so, as I told them; that the guns and ponies must be given up. This was the price of peace, and they must pay it. I wanted the guns then, and would take the ponies when we reached Keogh; that I was truly and heartily glad we had arranged this matter without loss of life on either side; they had ears and sense; they must listen and use their reason; there were many troops and Indian scouts in the country, and I thought they were wise to surrender.

Little Wolf said, in reply, "Since I left you at Red Cloud we have been south, and have suffered a great deal down there. Many have died of diseases which we have no name for. Our hearts looked and longed for this country where we were born. There are only a few of us left, and we only wanted a little ground, where we could live. We left our lodges standing, and ran away in the night. The troops followed us. I rode out and told the troops we did not want to fight; we only wanted to go north, and if they would let us alone we would kill no one. The only reply we got was a volley. After that we had to fight our way, but we killed none who did not fire at us first. My brother, Dull Knife, took one-half of the band and surrendered near Camp Robinson.



He thought you were still there and would look out for him. They gave up their guns, and then the whites killed them all. I am out in the prairie, and need my guns here. When I get to Keogh I will give you the guns and ponies, but I cannot give up the guns now. You are the only one who has offered to talk before fighting, and it looks as though the wind, which has made our hearts flutter for so long, would now go down. I am very glad we did not fight, and that none of my people or yours are killed. My young men are brave, and would be glad to go with you to fight the Sioux."

One or two others followed with similar remarks. They were suspicious, and the idea of giving up guns at once startled them, and in the fear of this to them immediate danger, forgot the future, and failed to ask me any questions about staying in the northern country. I therefore held them to the terms as long as I deemed judicious, and then compromised on my wagons as the place of giving up guns, to which they agreed. I felt that from this time out they could camp where I told them, and I could reverse our present position; and though I had no fear whatever of any trouble, I deemed it best to secure this advantage at once. I therefore told them to pack up and we could move out a short distance this afternoon. We moved about six miles and camped. I issued them some rations, and Dr. Sabin kindly looked after their sick and cared for their wounded; and by the time we reached our wagons, a great deal of confidence had been restored and good feeling nearly established.

At this point they surrendered the following arms: 4 Springfield carbines, caliber 45; 3 Springfield rifles, caliber 50; 4 Sharp's carbines, caliber 50; 1 Sharp's rifle, caliber 50; 4 Sharp's rifles, caliber 45; 1 muzzle-loading rifle; 3 Winchester-Henry repeating carbines, caliber 45; 3 Colt's revolvers, caliber 45; 2 Smith & Wesson revolvers, caliber 45; 5 Colt's revolvers, caliber 44 and 31; and 1 Remington revolver.

They had expended a good deal of ammunition since they surrendered, as I had allowed them to hunt each day. I permitted the matter to rest as though I was perfectly satisfied and convinced that all arms had been given up. I however told some of my scouts to examine privately after arms, and secured the services of Brave Wolf's brother, a young man in Little Wolf's band, to ascertain if any arms had been withheld; none could be found in this way.

On the morning of April 1, about six miles from post I halted the command. I had ordered Lieutenant Tillson with his detachment to remain in rear of the Indians; ordered Lieutenant Kingsbury with his company pretty well out to the right, and company E, Second Cavalry, to the left, thus quietly forming a sort of hollow square, with enlisted scouts in front, and apparently as the accidental result of a halt for the Indians to close up. I then called Little Wolf and all his men to me, and they formed, as usual, in a circle around me, seated on the ground. I told them that the orders were positive and imperative in regard to arms; I had no option in the matter; that I must not only satisfy myself, but I must take such measures as would satisfy those who issued the orders in regard to the terms through which they secured peace. Enumerating the arms surrendered when I reached the wagons, and that it was only natural to suppose that 33 men would have more than 30 stand of arms; that at that time some of them were troubled with suspicions and distrust, and it was perfectly natural they should try and retain some of their arms to protect themselves from the imaginary dangers, and those who had so retained arms must now give them up. They said they had given up all they had. I asked them if they could all arise, throw back their blankets, and show me that none of them had arms on their persons; they said they could, and did. I then had my scouts examine every pack and bundle, and they could find no arms. I had concluded that if they had any pistols they would naturally wear them on the day of reaching the post, as, of course, there would be more or less uncertainty in their minds as to what disposition would be made of them, and that this measure would effect as complete a disarmament as could be secured.

I reached the post at 11 a. m., and camped the two companies with the Indians, awaiting further instructions.

While the command was out the thermometer indicated 33° below zero; it has snowed and rained, and the ice has gone out of the streams, leaving them swollen, difficult and dangerous to ford.

No men were lost, and but two condemned quartermaster's horses abandoned; and the stock generally is in better condition to-day for a long trip than when I left the post.

I desire, in conclusion, to express my sincere thanks to Lieutenant Kingsbury, commanding Company I, Second Cavalry, Lieutenant Tillson, commanding the detachment of 20 men and artillery squad, and Acting Assistant-Surgeon Sabin for the prompt, hearty, and efficient manner in which they have carried out all my orders, performed all duties while on the campaign, the cheerful and uncomplaining way they have endured all its hardships.

I cannot speak too strongly in praise of the prompt and willing way in which the men of the command have performed every duty, and the earnest, sincere, and efficient manner in which the Indian scouts and interpreters, both Sioux and Cheyennes, have

aided and assisted the campaign to a successful termination, for without their aid and hearty co-operation, as I have before reported, I could have done nothing.

I am, sir, very respectfully, your obedient servant,

W. P. CLARK,

*First Lieutenant Second Cavalry.*

POST ADJUTANT,  
*Fort Keogh, Mont.*

HEADQUARTERS FORT KEOGH, MONT.,  
*April 6, 1879.*

SIR: In transmitting the report of Lieut. W. P. Clark, Second Cavalry, to department headquarters, I beg leave to call attention to the admirable and successful manner in which the scout was prosecuted by him. It is particularly gratifying at this time, in view of the difficulty which has attended in some cases the management of captive Cheyenne Indians, that this band was recaptured without firing a shot.

Very respectfully, your obedient servant,

GEO. GIBSON,

*Major Fifth Infantry.*

The ASSISTANT ADJUTANT-GENERAL,  
DEPARTMENT OF DAKOTA,  
*Saint Paul, Minn.*

I have already called the attention of my superiors to the excellent conduct of Lieutenant Clark, and I desire again to express my obligations to him for his extremely meritorious service.

By far the most important military event which has occurred in the department during the present year is the movement of Colonel Miles from Fort Keogh across the Yellowstone and the Missouri to the British boundary.

A full understanding of the manner in which the movement originated, and of the objects sought to be attained by it, can be best obtained from the following correspondence between the Department of the Interior, the War Department, the General of the Army, the division commander, Colonel Miles, and myself, viz:

DEPARTMENT OF THE INTERIOR,  
*Washington, May 12, 1879.*

SIR: I am in receipt from the Commissioner of Indian Affairs, under date of 10th instant, of a copy of communications, herewith inclosed for your information, dated Fort Peck Indian Agency, Poplar River, Montana, April 19, 1879, from Agent Bird, in which he states that companies of hostile Indians from Sitting Bull's camp are scattered over the entire northern part of that reservation; that the agency Indians complain bitterly of the encroachments of these Indians upon their hunting-grounds; also that the agency buildings and property at Poplar River and Wolf Point are unprotected.

In relation to the danger threatening the agency property at the points named, the Commissioner requests that troops may be furnished for the protection of the goods and property of the agencies as well as for the security of the reservations and the hunting-grounds of the Indians and to prevent the destruction of the buffalo and other game necessary for the subsistence of the tribes.

I concur in the request of the Commissioner, and recommend it to the favorable consideration and action of the honorable the Secretary of War.

Very respectfully,

C. SCHURZ,

*Secretary.*

The Hon. SECRETARY OF WAR.

UNITED STATES INDIAN SERVICE,  
FORT PECK INDIAN AGENCY,  
*Poplar River, Montana, April 19, 1879.*

SIR: In a communication I sent you, dated 10th of February last, and in my monthly report for March, dated March 31, I informed you that Sitting Bull's Indians were scattered over the Indian reservation in camps of half a dozen to one hundred lodges from the mouth of Milk River to Wood Mountain police station.

I now have the honor to recur to the same subject, and desire to call your attention in an especial manner to the fact that the companies of hostile Indians from Sitting Bull's camp are now scattered out, occupying the entire northern part of the reserva-

tion. Our agency Indians are coming into the agency now daily, and complaining bitterly of the encroachments of these Indians on their hunting grounds. They say they find Uncapapas from Sitting Bull's camp everywhere, driving and scattering the buffalo and other game, so that it has become a matter of real difficulty for them to obtain buffalo enough for their subsistence. They further complain that these Indians steal their horses and run them off over the boundary line.

I believe there is no doubt at all that Sitting Bull is now on American soil, and has been camped south of the boundary line since the middle of February last, and that practically all his Indians are now south of our northern boundary, there being, as they claim, no game for their subsistence on the Canadian side.

I call your attention in this special manner to this state of things in regard to these hostile bands of Indians, believing that you would, with a knowledge of the facts before you, call the attention of the proper authorities to the subject, that some attention may be given to the matter, and the Indians and people and property of this Indian agency be protected from their encroachments and possible raids.

A more unprotected condition than now exists of the buildings and property of the agency, at both Poplar River and Wolf Point, cannot be conceived. Certainly no more property should be delivered and stored at either place without some additional protection is afforded by the proper authorities.

I am, very respectfully, your obedient servant,

W. BIRD,  
*United States Indian Agent,*

Hon. COMMISSIONER OF INDIAN AFFAIRS,  
*Washington, D. C.*

[First indorsement.]

HEADQUARTERS OF THE ARMY,  
ADJUTANT-GENERAL'S OFFICE,  
*Washington, May 22, 1879.*

Official copy respectfully referred to Lieut. Gen. P. H. Sheridan, commanding Military Division of the Missouri, for such action as the case calls for, in his judgment.

By command of General Sherman.

E. D. TOWNSEND,  
*Adjutant-General.*

[Second indorsement.]

HEADQUARTERS MILITARY DIVISION OF THE MISSOURI,  
*Chicago, May 26, 1879.*

Respectfully referred to the commanding general Department of Dakota for his information and such action as may seem to him advisable.

By command of Lieutenant-General Sheridan.

GEORGE A. FORSYTH,  
*Lieutenant-Colonel and A. D. C.*

[Telegram.]

HEADQUARTERS DEPARTMENT OF DAKOTA,  
*Saint Paul, Minn., May 30, 1879.*

ADJUTANT-GENERAL DIVISION MISSOURI, *Chicago:*

Referring to the communication from the Interior Department to the War Department regarding the presence on our side of the line of parties from Sitting Bull's camp and the complaints which our own Indians make against them, which was referred to me by you on the 26th instant for such action as might seem to me advisable, I desire to represent to the Lieutenant-General that I see no way of putting an end to the annoyances of which our Indians complain except by organizing a strong column at Fort Keogh and sending it north of the Missouri to clear the country.

This being done, the establishment of a summer camp of moderate size, at the Poplar Creek Agency, would probably keep the country free from intruders. But under existing orders I am not at liberty to take this course.

The Lieutenant-General will doubtless recall the orders given by the General of the Army in February, 1878, when I proposed to send Colonel Miles up to the same region.

I respectfully ask instructions.

TERRY,  
*Department Commander.*

[Telegram.]

CHICAGO, May 31, 1879.

TERRY,  
Paul, Minn.:

of yesterday, relative to organizing a column at Keogh to clear the  
of the Missouri of hostile Indians, was received and forwarded for  
General of the Army in the absence of the Lieutenant-General.

GEO. A. FORSYTH,  
Lieutenant-Colonel and A. D. C.

[Telegram.]

CHICAGO, May 31, 1879.

H. TERRY,  
Department Dakota,  
Saint Paul Minn.:

dispatch just received from the Adjutant-General:  
of the Lieutenant-General.

GEO. A. FORSYTH,  
Lieutenant-Colonel, A. D. C.

"WASHINGTON, D. C., May 31, 1879.

GENERAL  
of the Missouri:

The Army says there is no objection to the course suggested by General  
of this date, only we are not now prepared to build posts, or main-  
h of the Missouri between the new post Assinaboine and Buford.  
tion to temporary operations or a temporary cantonment at Poplar

"E. H. TOWNSEND,  
Adjutant-General."

[Telegram.]

HEADQUARTERS DEPARTMENT OF DAKOTA,  
Saint Paul, Minn., June 5, 1879.

TERRY,  
Fort Keogh, Mont.:

and permission from the General of the Army to send a column north of  
clear out the straggling bands of hostile Sioux which have come across

are complaining of the presence of the intruders. The task will be a  
licate one, for it will be necessary to distinguish most carefully be-  
ans and these intruders, and to so conduct operations as to create no  
e former. It will be desirable to force the Sioux back rather by a dis-  
an by actual conflict. I desire you to take command in person. You  
ee companies of cavalry at Custer in addition to all the forces that can  
Keogh; also all the transportation at Custer, except what will be  
use.

a depot of supplies on the Missouri. This depot will be supplied from  
one or two companies of infantry can be sent from Buford to guard it.  
the Sioux back, it is proposed to establish a summer camp of moderate  
ar Creek Agency.

communication as strictly confidential, and telegraph to me when you  
move, what force you can take, and where you would like to have a  
ed.

TERRY,  
Brigadier-General, Commanding.

from Colonel Miles's report as commander of the district of  
one the following narrative of his operations under the  
him:

HEADQUARTERS DISTRICT OF THE YELLOWSTONE,  
Fort Keogh, Mont., September —, 1879.

ADJUTANT-GENERAL,  
Department Dakota, Saint Paul, Minn.:

June 5, 1879, I received a telegraphic order from the department  
sed upon a request of the Commissioner of Indian Affairs, and concurred



in by the Secretary of the Interior), directing me to take the available force from the District of the Yellowstone and move north of the Missouri, to separate our friendly from the hostile Sioux Indians and to clear out those who had moved south of the boundary line; after driving them back, to establish a summer camp north of the Missouri.

On the 23d of June, preliminary to the movement of the troops, I sent Colonel Whistler to the Poplar Creek Agency to ascertain the cause of trouble there. He reported the Indians almost without food and complaining of the trader's charging exorbitant prices for his goods. By my direction he crossed the entire Yanktonnais camp of between three and four hundred lodges to the south side of the Missouri.

By executive order, the reservation of this tribe of Indians had been extended south to the Yellowstone; on that part of their reservation they found abundance of game and were at once satisfied.

The tribe of Assinaboines, that have for years been annoyed by the Sioux, were moved south so as to be in rear of the command when it moved north of the Missouri River. Twenty of their number enlisted as scouts; their knowledge of the country was found valuable.

In accordance with the order of the department commander, the command, composed of seven companies of the Second United States Cavalry, and seven companies of the Fifth United States Infantry, a detachment of artillery, and friendly Indians and scouts, with the necessary transportation, left the Yellowstone River at Fort Keogh July 3 and 5, 1879.

On the 10th, 11th, and 12th, this command crossed the Missouri at Old Fort Peck. At that point my force was increased by 98 recruits and two companies of the Sixth United States Infantry; the latter as guard for the supply depot. Completing the equipment of the command for the field, I left Fort Peck on the 15th day of July, with the organization heretofore mentioned, numbering 33 officers, 643 enlisted men, 143 friendly Indians and enlisted scouts, moving north from the Missouri, passing up on the south side of Milk River, and on the 16th reached Campbell's Houses. The same day, the Cheyenne and Crow scouts, under Lieutenant Clark, arrested a party of French half-breeds, and ascertained that some 400 Sioux warriors had been near his camp the day before. The half-breeds falsely reported that there were no Sioux south of Milk River, and that they had all returned to their camp near the Canadian line on Frenchman and Little Rocky Creeks.

On the morning of July 17, 1879, Lieutenant Clark, with a detachment of Indian scouts and Lieutenants Borden's and Hoppin's companies, were sent up Beaver Creek to look for half-breed camps and any signs of hostile Indians, the main command moving four hours later. At 12.30, a report was received from Lieutenant Clark that a party of some 400 hostile Sioux had been discovered about five miles up Beaver Creek and that he was about to engage them.

The impetuous attack of our friendly Indians, followed by the vigorous charge of the troops, resulted in driving the Sioux some 12 miles across the plain between Beaver Creek and Milk River, compelling them to abandon much of their property. When near Old Fort Browning (an abandoned trading-post), the Sioux made a stubborn resistance, and, being re-enforced, for a time pressed the small command from all sides. Lieutenant Clark had, however, taken up a strong position, and as the main command had been moved forward rapidly, the Sioux, under Sitting Bull, fled to the north side of Milk River and in the direction of head of Little Rocky Creek, leaving eight of their dead behind them. This affair was followed by the command crossing Milk River at Old Fort Browning, and moving up Frenchman's Creek west of the trail to the only ford at Old Fort Turney. The trail was then followed to where it crossed the Canadian line near main branch of Little Rocky Creek.

On July 23, 1879, Major Walsh, of the Northwestern Mounted Police, visited my camp immediately south of the line, and was informed of the object of our movement and the occasion of so large a force of troops being on the boundary line, namely, the depredations and trespasses committed by Indians from the Canadian side, and who had been pursued to that point. He stated that he believed no depredations would be committed in the future. After his departure the command moved down Rocky Creek to head of timber.

On the 28th of July, Major Walsh, of the Northwestern Mounted Police, came to my camp, accompanied by a representative of the hostile Sioux named Long Dog, an Uncapapa, who has for years been regarded as a man of much influence among the hostiles. In answer to a question as to "whether the Sioux had chosen their country, and on which side of the boundary they intended to remain," turning to Major Walsh, he said: "We intend to remain with him." Major Walsh stated they had given him the same answer, and told him that they would send out no more war parties. He also assured me that no apprehension need be felt that any hostile movement would be made south of the line. I regarded this as the best results that could have been attained, and the assurance worthy of confidence.

*I am gratified to say that up to the present time the promises then and there given have been*

*rigidly adhered to*; not a single act of hostility has been committed or a dollar's worth of property stolen by those Indians to my knowledge.

From all the information I have gathered during the past three years from reliable men who have been frequently through their camps, from traders and half-breeds, as well as from American and Canadian officers, the strength of that camp numbers between 6,000 and 8,000 souls, with between 12,000 and 15,000 horses, divided into four large camps: The Uncapapas, under Sitting Bull; Black Moon, Long Dog, and Pretty Bear; the Minneconjour, under Black Eagle; the Sans Arcs, under Spotted Eagle, and the Ogallallas, under Big Road or Broad Tail.

As this large body of Sioux is composed of the worst Indians of the Northwest country, I consider the fact of their being driven out and their becoming expatriated by their own acts as more important and satisfactory than would have been their unconditional surrender.

This country is now free from their depredations; we avoid the expense of supplying them with food and clothing, and there need be no difficulty in keeping them out of the country in future.

After the above had been accomplished, a battalion of cavalry, under Major Baker, was dispatched to the junction of Frenchman's Creek and Milk River, with a force under Lieutenant Clark well out to the west. Lieutenant Randall's, Captain Oven-shine's, and Major Gordon's commands were sent east to Porcupine and Poplar Creeks. The commands in one week arrested 829 half-breeds, who were intruders upon our Indian reservation. Their camps had been places of refuge for war and stealing parties and for illegal traffic. Those who belonged north of the Canadian line and were British subjects, together with a small camp of 20 lodges, non-treaty Cree Indians from the Saskatchewan, were sent north of the boundary line; those who belonged in north-western Dakota, near Morehead and Turtle mountains, were sent east to Fort Buford; and the remainder—158—sent south of the Missouri River and located in Judith Basin.

Those sent north of the line have given no further trouble. Those sent to Judith Basin are contented, well pleased with the country, and are anxious to take up land, make themselves homes, and abandon their nomadic life.

Since the return of the command, I have been informed that a part of those sent to Buford were liberated, and that they returned in the direction of Poplar Creek, where they were arrested. I regret this; for if they are allowed to trespass upon ground from which every American citizen or British subject is debarred, this camp will become again the nucleus for the roaming and disaffected bands as well as a place of refuge for the lawless.

During the time thus occupied, information had been sent me of the escape of a band of Indians under Fast Bull, who belonged at the Lower Brulé Agency; also, of their having committed depredations near the Black Hills and the Upper Little Missouri in their movement north to join Sitting Bull's camp. To intercept this body of Indians, I dispatched Colonel Whistler with five companies of the Fifth Infantry, with one light Hotchkiss gun, to watch the crossing of the Missouri between Wolf Point and Poplar Creek. This movement was promptly made, and his command placed at available points along the river, with his scouts some 60 miles on the south side of the Missouri. From information given by them and some friendly Yanktonnai Indians, Colonel Whistler learned of the approach of the band to the Missouri near Poplar Creek.

Making a forced march, on the 10th of August, he arrived in time to surprise the band just as they had crossed the Missouri and to compel their surrender without the loss of a single man or horse.

Fast Bull's band numbered 57 men, women, and children. They were disarmed and dismounted, and sent down the Missouri to Fort Lincoln by steamer General Sherman.

In accordance with instructions to withdraw the command from the country north of the Missouri, the command marched back in three columns: that under Colonel Whistler, from Wolf Point to Fort Keogh; Major Baker's battalion via Fort Peck and the Big Dry Forks; and Major Gordon's command via Beaver and Fourchette Creeks to mouth of Musselshell, thence up that valley across to Terry's Landing to Fort Custer.

The command returned in excellent order, having carried out to the full extent the letter and spirit of the orders of the department commander, and accomplished even more than was originally contemplated.

I have the honor to remain, very respectfully, your obedient servant,

NELSON A. MILES,

Colonel and Brevet Major-General, U. S. A.

The value of the results obtained by Colonel Miles can hardly be over-estimated. The hostile Sioux, who in 1876 found an asylum in British territory, had been permitted by the Dominion Government to repair all

the losses of arms, horses, and equipments which they suffered in the campaign of that year, and to completely prepare themselves again for war. Made bold by the knowledge that they possessed close at hand a secure refuge on foreign soil, to which they could retreat in case they should meet a force with which they could not cope, they had invaded our territory almost as a body, and had covered with marauding parties the country between the boundary and the Yellowstone River, and from Fort Logan on the west nearly to Fort Buford on the east. Horses and cattle had been stolen, settlers had been murdered by them, and I regret to say that I know of no adequate efforts on the part of the Dominion Government to fulfill the obligations which that government assumed when it gave to these people a refuge from the military forces operating against them—of no adequate efforts to prevent this armed invasion of the territory of a friendly neighbor. Now it is believed that not a hostile Sioux remains south of the boundary, and, to quote again the language of Colonel Miles, "This extensive country has been again cleared of hostile Indians, and the scattered settlers and travelers in it are as free from molestation as in the States of Kansas and Minnesota."

Colonel Miles, clearly and accurately comprehending the purposes of the government and the objects sought to be accomplished, and conforming in all respects to the instructions which he had received, by a most happy union of enterprise and audacity, prudence and foresight, succeeded in obtaining these results without the loss of a single soldier.

Besides the immediate result of his operations in forcing the hostile Indians across the boundary, there is good ground for the belief that a moral effect of even greater importance has been produced—a moral effect that will be lasting, and will tend to preserve the peace of the border in succeeding years.

I desire to thank Colonel Miles and his officers and men thus publicly for the exceedingly important service which they have rendered, and I trust that these services will receive a just recognition from higher authority.

I desire also to call attention to the services rendered by Lieutenant-Colonel Whistler, and the troops in the capture of Fast Bear and his band, as set forth in Colonel Miles's report.

During the past summer work has been vigorously prosecuted on the Missouri division of the Northern Pacific Railroad. This division, commencing at the Missouri opposite Bismarck, extends one hundred miles toward the Little Missouri. Eighty miles of road-bed have been completely graded, and the track laid for fifty miles. The work is still being pushed forward.

To guard and protect the surveying and working parties along the line, four companies of infantry from the garrisons of Forts Lincoln and Buford have been employed. These companies have been distributed along the line, and have moved from point to point as different sections of the work have been finished. They will be recalled to their stations before the winter sets in. It is possible that the railroad company may prosecute their work during the coming winter at and near the point where the road will cross the Little Missouri. Should they do so, it will be necessary to establish a small cantonment there for the protection of their laborers.

At the time of the last annual report from the department, the construction of Fort Meade had been commenced. Work upon it was continued until the funds appropriated for the post were exhausted. Recently, other funds having been set apart for that purpose, work has been resumed, and it is expected that before the commencement of winter the

buildings for a garrison of four companies of infantry and six will have been completed. I have not personally inspected all reports regarding it concur in saying that it will be one of the most comfortable posts on the frontier. Preparations for the construction of the new post authorized to be built at the foot of the north slope of Bear's Paw Mountains (Fort Assinaboine) were commenced in the season by sending the Eighteenth Infantry, then just returned from the department, to the selected site.

The regiment embarked on steamers at Bismarck, and after a protracted voyage up the Missouri reached "the Coal Banks," the nearest point on the Missouri to the site of the new post. Leaving two companies at the Coal Banks as a guard to the stores and supplies to be used by the regiment, Colonel Ruger, with the remainder of his regiment, proceeded to the new post and commenced preparations for building. On account of the scarcity and high price of lumber in that region it was determined to build of brick, and the necessary supply of this material was contracted for, but much time was necessarily consumed in the manufacture of the brick well started, so that, although preliminary work was previously done, the erection of the post was not fairly commenced until late in June.

The work has been prosecuted with energy, and an excellent post will have been substantially completed before the close of the season.

The post is now and will be for many years to come a very important one. It should be enlarged so as to afford quarters for a garrison of sixteen companies. Colonel Ruger has recommended an additional appropriation for it of \$125,000. I think that this sum is more than absolutely necessary to do the work proposed, but I earnestly recommend that an additional appropriation of \$100,000 be asked for. I also recommend that an appropriation of \$200,000 be asked for to build a post in the valley of the Milk River or upon some one of its tributaries. A post in this vicinity is urgently needed to strengthen the chain which stretches along the northwestern frontier from the mouth of the North toward the Rocky Mountains. The posts constituting this chain are Forts Pembina, Totten, Buford, and

Between the two last named is an interval of more than thirty miles; the crow flies; and midway of this interval is the great route of invasion pursued by the Indians coming from the hostile camps in the north of Canada to the valleys of the Missouri and the Yellowstone. The agencies of kindred bands in Dakota.

As the prospects for peace on the northwestern frontier are uncertain, and since the successful operations of Colonel Miles, it yet seems wise and imprudent to neglect any precaution—any measure which would enable us to confront on the threshold a report of invasion on our territory. To fill the gap between Bismarck and Assinaboine by building a large post in the lower Milk River is one measure of preparation which the situation imperatively demands. Such a post should be built for a garrison of not less than sixteen companies; preferably it should be for sixteen companies. It has been made to determine what resources the lower Milk River affords for the construction of a post; but I am of opinion that on account of the scarcity of suitable timber it would be necessary to build of brick, and whether this would be necessary or not, brick is the material for the rigorous climate of that region would be by far the most

A sum of \$200,000 would be sufficient but not more than sufficient



for a post to be garrisoned by twelve companies, and it probably is as much as could be profitably expended on a post in any one year.

Should the Northern Pacific Railroad be opened to the Yellowstone River during the coming year, it will probably be necessary to occupy at least one point between that river and the Missouri with a garrison of moderate size. I recommend that this probability be kept in mind in estimating for the expenditures of this department during the next fiscal year.

At the date of the last annual report, work had been commenced on the military telegraphic lines connecting Forts Stevenson, Buford, and Keogh with Bismarck, and the line from Fort Keogh to Deadwood. These have since been completed as also the lines from Fort Keogh to Fort Custer and Fort Ellis; from Helena to Fort Shaw, Fort Benton, and Fort Assinaboine, and from Fort Lincoln to Fort Yates. The continuation of this latter line to Fort Sully is nearly completed. Work has also been done on the lines connecting Helena with Fort Missoula, and Fort Bennett with Fort Yates and Fort Meade; but for want of sufficient transportation it has been found impracticable to complete the lines from Fort Bennett to Fort Meade during this season. The others will be in operation before the close of the year.

The labor of digging holes and setting poles has all been done by the troops, and in some instances they have also cut the poles. The transportation of poles and other material has been furnished principally by the Quartermaster's Department.

The private line from Fort Ellis to Helena, by which the line between posts on the Yellowstone is connected with those in Northern and Northwestern Montana, has been purchased by the government.

I transmit herewith the annual reports of the district and post commanders serving in the department; also the reports of the chiefs of staff departments at these headquarters, and I invite attention to the recommendations therein contained. I especially invite attention to the recommendation of the chief commissary of subsistence that all of the annual supplies for the posts in Montana Territory be sent forward in the early spring. An experience of six years in this department convinces me that it is not good policy to delay until summer the sending forward of any stores destined to these posts. I also concur in the recommendation of the chief commissary of subsistence in regard to the method of making contracts for beef cattle for the use of troops in the field. The plan which has been pursued this year has failed to give good results. In my judgment in nine cases out of ten it will fail.

I desire to express my obligations to the district and post commanders, as well as the staff officers serving at these headquarters, for the able, faithful, and zealous manner in which they have discharged their respective duties during the year.

I am, sir, very respectfully, your obedient servant,

ALFRED H. TERRY,  
*Brigadier-General, Commanding.*

The ADJUTANT-GENERAL OF THE  
MILITARY DIVISION OF THE MISSOURI,  
Chicago, Ill.

## REPORT OF BRIG. GEN. JOHN POPE.

HEADQUARTERS DEPARTMENT OF THE MISSOURI,  
*Fort Leavenworth, Kans., October 3, 1879.*

COLONEL: I have the honor to submit the following report of affairs in this department for the past year:

## INDIANS.

The band of Northern Cheyennes, which at the date of my last report had broken away from their agency in the Indian Territory, and were on their way north, succeeded in effecting their escape from this department and crossing the Platte River. It is not necessary to set forth the reasons for their escape. The proceedings of a general court-martial on some of the officers engaged in the pursuit have sufficiently set forth the facts for any purposes of the government.

Part of this band was surrounded and captured in Nebraska and confined at Camp Robinson, from which post they attempted to escape and the larger part of them were killed. The small fragment left was sent back to this department, and all the men (seven in number) were by order of the War Department turned over to the State authorities of Kansas for trial, having been first identified as participants in the murders committed by the band within the limits of the State. They are still in confinement at the State prison, and it is understood will be tried in October.

The remainder of the Northern Cheyennes at the agency in the Indian Territory have been very restless and discontented for a long time, and, under Little Chief, are, in my opinion, ready at any favorable time to break away to the north. I do not consider their feeling or status at all satisfactory, and I am omitting no precautions which I have the right to take to provide against an outbreak. The force of cavalry in this department is wholly inadequate for anything like complete security against the Indians in the Indian Territory. I have repeatedly urged an increase of cavalry force, and stated in full the necessities of the case, but thus far it has been found impracticable to furnish it.

I do not believe, from the official information I have on the subject, that the removal of the Comanches and Kiowas from the Sill Reservation to the Wichita Reservation will be satisfactory to the Indians or beneficial to the public interests. If, however, the Indian Department be held responsible for the consequences, I shall have nothing to say, but I do most respectfully submit that, as the military authorities have opposed this removal to the full extent of official propriety and for reasons which appear to them sufficient, they should in no sense be blamed for any evil results that may follow the removal.

The bands of outlaws and horse thieves who have always infested the Indian Territory have of late greatly increased in numbers and boldness, and, under the orders of the War Department, I have three cavalry companies scouting the eastern part of the Territory to hunt them down if possible. Most of the inhabitants of that region, however, are in such a state of terror of these outlaws, that no information concerning these bands, or individuals of them, can be procured from them, and the troops will have a long and difficult task before them.

## INVASION OF INDIAN TERRITORY.

During last spring there was some excitement (much more in the East than here) about a proposed invasion of the Indian Territory for occu-

pation and settlement. Misled by absurd notices and proclamations put forth by a man named Carpenter, a good many honest and worthy people did begin to move south for the purpose of entering upon the lands in the Territory under the belief that they had a legal right to do so; but in every case, when properly notified that they would violate the law by such a movement, those of them who had entered the Territory returned, and those who had not reached the line turned back. There is no doubt that the whole excitement was created for certain local interests not worth while to set forth; and was stimulated by parties interested for purely speculative purposes. The whole affair faded out as soon as the purposes of the government were known, and it was made manifest that the proceeding would be arrested by force if necessary. Some infantry force is still kept at points along the northern line of the Territory, but as there is no likelihood that further movements into the Territory will be made this winter, it is probable that this small force can be withdrawn for the winter very soon. It is, however, not improper to say that as the whole of the eastern portion of the Indian Territory constitutes one of the finest agricultural and pastoral districts of the country, is a most attractive region to the white emigrant, and is only sparsely occupied by tribes of Indians who make little use of its productive capacity, the government must expect and in my opinion should be prepared to meet greater difficulty every year in preserving it to the occupation of the Indian tribes. This section will support, when properly cultivated, some millions of civilized people, and greatly add to the productive wealth of the country. That it is coveted by people desiring to emigrate from all parts of the West is beyond question, and it is equally certain that every means will be resorted to to acquire a foothold in it and its virtual possession by the whites. To illustrate its great area, and the very insignificant manner in which it is now occupied, I submit, inclosed, a tabular statement showing the area occupied by the Indians, who make little if any use of the soil, and a comparison in that respect with the populous States east of it. To hold it in secure and unmolested possession of the Indian tribes now there will require a larger force every year, and before long a continuous cordon of posts near together and entirely surrounding it. I merely set forth the situation as it is that the government may be prepared for increasing demands for the protection of the Indian Territory against emigration of the whites and a constantly increasing military force to that end.

#### THE UTES.

The state of affairs in Western Colorado has now reached a condition when it is no longer possible to leave the Ute Indians where they are, without constant collision and outrage on both the part of the whites and Indians. Not only is the great Ute reservation in Southwest Colorado a valuable agricultural district, and quite essential to the support of the large population pouring into that region, but valuable mines, said to be much like those at Leadville, have been discovered on the Gunnison River, within the limits of the Ute reservation. It is easy to anticipate the result of leaving these Indians in occupation of valuable mineral and agricultural lands in a section of country into which white emigration is pouring with its usual energy, and which presents attractions wholly irresistible to the white emigrants of this country. Whatever effort the government shall make with the military force to arrest this movement into the valuable mining districts within the Ute reservation, must be, to a large degree, futile, and beyond doubt prejudicial

ts of the government as well as of the State of Colorado. s between the Indians and whites under such circumstan- a to lead to numerous acts of violence and wrong, commit- sides, and wholly incapable of redress. The consequences ndition of affairs nearly always fall upon the innocent and h red and white people suffer alike in such an environment. as certainly come, in the case of the Utes, when the safety ans and whites demands some change of location for the ads which offer no such temptation to the whites. The and rich mineral lands embraced within the present Ute are of no value to the Indian. He neither mines, nor, to ble extent, farms, and a country abounding in game and in every way suited to his simple life, would be far better for more secure to his possession. Thoroughly impressed with s, I invited the attention of the government, long since, to , indeed the necessity, of removing the Utes outside of the rado, and of consolidating their agencies and reservations e located on the headwaters of the West Fork of the Chama valley of the Navajo River. That country is fully described report of last year, and is perfectly adapted to the wants as. It was proposed, in the same connection, to establish e military force at Pagosa Springs, on the flank of this res- prevent trouble from or with the Indians, and an appropri- le last winter for this purpose; but I do not consider it build the post until it is certain that the Indians will be l. Two companies of infantry are now in cantonment at will remain there this winter.

ion to treat with the Utes in this view was sent out last agreement was made with the southern bands (who at pres- nly Indians with whom the trouble indicated is likely) to new reservation which the commission marked out in the t of Colorado. This agreement has not yet been ratified by nd, before such ratification is made, I wish to suggest, as may, that the reservation set out by the commission is in aulty in several important respects. In the first place, I ssential to peace and to the welfare of the Indians, as well sts of the government and the State, that this new reserva- ssible, outside of the State of Colorado. Aside from every eration which might be advanced, the public mind in Colo- ly excited on this subject, and imperatively demands (and ely demands) the removal of these Indians to some locality e State, a feeling which is entitled to very high considera- reservation, as marked out by the commission, lies across dding from the east and south into Southwest Colorado, so el in that direction must pass directly through the Indian ource such an arrangement is unfortunate alike to whites and is sure to lead to frequent collisions and incurable dis- ill sides; and 3d, the agreement does not include the White of Utes.

erewith a map showing in *red* the boundaries of the new as proposed by the commission, and in *blue* the boundaries d which seem to me to cover the necessities much better. rely on every account that in acting upon the agreement of ween the Utes and the commission to treat with them, the r new reservation as suggested by me will be adopted in o those proposed by the commission. Early attention should

be given to this subject, as the relations between the emigrants and the Indians are becoming every day more critical, and although I do not believe that any such thing as a general war is at all likely, yet it is quite out of the question that things can be left long as they are without serious troubles and collisions, leading at times to loss of life.

#### THE APACHES.

The Apaches in Southern New Mexico and Arizona are much as they have been, and probably will continue to be until removed entirely from that region. They are a squalid, untrustworthy people, robbers and thieves by nature, and with less form of government than any Indians in this country. They continue to break out from time to time in small parties or individually, and rob and steal in a small but very irritating way. It is about as difficult to watch them as it is a thief in one of our great cities. They require to be hunted down by small detachments over a large region of country, and give the troops more hard service and the government more expense than tribes ten times more formidable both in numbers and warlike capacity.

It is not possible to go into details about the doings of these Indians or the operations of the troops against them without extending this report beyond reasonable limits. It will be sufficient to say that they have not done much harm, except in a small way, and that the troops are in the field most of the time to prevent this. The Mescalero Agency, near Fort Stanton, serves at present a very good purpose in furnishing a convenient and satisfactory scapegoat for all Indian, or supposed Indian, troubles which occur anywhere in Western Texas. I venture, however, in the case of this Indian reservation, to express the very confident belief that the cause is wholly inadequate to the disease, and that no more raiding of any kind is done from the Stanton reservation than from any other Indian reservation in the country. I trust that, as soon as the necessities of the case elsewhere will admit of it, the Indian reservation near Fort Stanton may be permitted to return to its original obscurity and insignificance.

#### MILITARY POSTS.

The military posts in this department are generally in good condition. Some of them, by reason of changed circumstances, no longer fulfill any important military object beyond the shelter of troops, and could be dispensed with if accommodations for their garrison could be had elsewhere. Larned, Hays, and Lyon are no longer needed for military defense of the frontier, although the troops now occupying them are at times entirely necessary for this service. The posts themselves are out of position for prompt use in any prospective troubles with Indians; so far out of place that it is not easy to use their garrisons at points where the only Indian troubles are at all likely to occur in the future. One important and well-located point in Western Kansas only is necessary for the protection of that frontier, which, if well garrisoned by an effective force, would accomplish, and accomplish far better and more economically, the objects for which the four posts of Lyon, Wallace, Hays, and Larned were established. That point is Fort Wallace, which commands all the routes traveled by Indians to and from the Indian Territory in the south and the Indian reservations north of the Platte. A glance at the position of this post and the trails leading near it will show this fact.

therefore, to build at Wallace quarters for at least six companies of cavalry and two of infantry. It is now garrisoned by only two companies of infantry. By removing the buildings from Hays to Wallace, shelter for this force can be provided at Wallace, and with ease. I ask authority to do this with the troops, and that a plan which I will indicate hereafter as we may find it necessary, for this purpose.

There have been made for building a four-company post at El Paso, already named Fort Bliss, by order of the Secretary of War. It will be completed as rapidly as possible. The whole cost of the post and the contracts will be within the sum appropriated by Congress for this purpose.

At Fort Lewis, to be built near Pagosa Springs, Colorado, I have said enough. The construction of it ought not, in my opinion, to be begun until the location of the Ute Indians be settled, which probably can be done by the 1st of March next.

Last winter it became necessary for the protection of the Kansas frontier to establish a cantonment in the Indian Territory on the North Canadian, between Fort Supply and Fort Reno. It is now garrisoned by six companies of infantry (one mounted), and has served as an almost complete check to any movements of the Indians in that region toward the north. The troops have huddled themselves in the winter without suffering this winter, but as this will be needed and more needed every year, as well for the protection of the Indian Territory against white invasion as for the protection of the Kansas frontier against Indians, I ask that an appropriation of \$10,000 be requested this winter to build a permanent post. It may be the condition of the Indian tribes in the future, it is probable that this post will be needed to maintain them in possession of their lands, and to protect them against broils and difficulties with the whites, both respectable persons and outlaws.

At Fort Leavenworth new barracks are needed, and have been needed for some time. The old frame barracks built here many years ago are becoming dangerous to live in, as well as being a very inferior shelter for troops. They will not stand much longer and should be replaced by substantial buildings of brick. I ask thirty thousand dollars for this purpose.

#### TROOPS.

Soldiers in this department are generally in good condition as to health and efficiency. The constant work imposed on them both as soldiers and as laborers in the field leaves little of the time possessed by them for arms of service for drills or other military exercises. It is well known, and indeed always has been hoped, since I have been in the Army, that for the interests of the government and the condition and efficiency of the Army, no work as laborers, mechanics, wagon drivers, or the like should be imposed on soldiers, and that all such labor be done by persons enlisted or hired for this service. It is scarcely to be expected that such a hope will ever be fulfilled, but it appears that the soldier can be relieved from much of the labor in this department by imposing on him by increasing the appropriations for such labor as it be necessary in consequence to decrease them for other purposes.

These remarks are specially applicable to the regiments of the New Mexico, which are either in the field or engaged in labor, and are not suitable to military efficiency for a great part of the time. It is not advisable in all respects that from time to time the regi-



ments in this department should be brought in to some such post as this, where a large number of the companies can be concentrated for purposes of discipline and instruction. This post is specially adapted to this purpose, and is, besides, a convenient place for a reserve force, to be used to supply sudden demands for troops both in the Indian Territory and in Western Kansas or elsewhere. This exchange of regiments in turn cannot fail to be of the greatest service to the condition and morale of the troops, and is entirely practicable and safe with the means of communication and transportation at command.

#### MEXICAN BORDER.

Two years ago when the difficulties concerning the ownership of certain salt lakes near El Paso, in Northwestern Texas, occurred, that part of the Department of Texas embraced within the field of trouble was transferred to this Military Department, and a force was sent from New Mexico which quieted the commotion and has maintained the peace since in that region. Much complaint has been made from Texas, New Mexico, and Arizona of the incursions of Indians from Mexico into those sections of the country, and counter representations have been made by the Mexican minister to this country of the same character, and charging the same offenses upon Indians and whites from the United States. There is no doubt some truth in both statements, but I think not to the extent claimed by either party. Along a very sparsely settled frontier between foreign nations, especially along such a frontier as this, there must of necessity always be found outlaws and thieves—red and white—who make use of the shelter of both countries for plying their vocation in safety. There would seem to be no sufficient remedy for this state of things, unless permission be given for the troops of one country to pursue such marauders into the other. If hot pursuit must cease the moment the boundary line is reached, it is useless to expect effectual results. It is not possible, with any such force as can be furnished, to watch every point on this long frontier, so as to prevent this sort of raiding, and although the limited force for this purpose is employed actively and unceasingly, more or less of these things must, in the nature of things, happen. I consider it very unfortunate, in this view, that certain of our Indian reservations have been located so near to this frontier. It has been found, and I believe is, impossible to keep all the men of an Indian reservation upon it, when all are armed and mounted, and when robbery and raiding are and have been the habits of their lives. A great Indian reservation sparsely occupied by armed and mounted men of this character cannot be guarded like a jail or penitentiary, and, indeed, can scarcely be guarded at all with any efficiency, when the guard duty must be conformed to the effort to give these people almost complete latitude of movement in the hope of civilizing and christianizing them. If they could be disarmed and dismounted and a pressure brought to bear upon them, through military force, to remain on their reservations, no doubt a great deal would be gained in restraining them from such raids, but when we consider the immense difficulty in preventing crime even in our large cities, where criminals or the criminal classes are directly under the eyes and hands of a powerful police, it is easy to understand how nearly impracticable it is on these great Indian reservations, when the government actually furnishes to, or allows to be kept by, the prospective offenders the implements necessary to carry on their evil work.

I invite attention in this direction to a misapprehension under which the commanding general Department of Texas appears to lie in regard to



s and his own department. The letter of the commanding officer of the Division of the Missouri, defining these limits, is, viz: "The jurisdiction of the officer commanding the Division of the Missouri is intended to extend to and include the town of El Paso on the Rio Grande River, and that portion of El Paso County on the east and west line passing immediately south of that line; therefore, apparent that this department has neither jurisdiction over any part of Texas south of that line, nor is responsible for any part of the Rio Grande by Mexican or other Indians anywhere. The commanding general Department of the Missouri is to think that this department has jurisdiction and is accountable for whatever happens along the Rio Grande for several hundred miles. El Paso, a misapprehension which it seems has misled the public, and which I request be corrected.

Report from the commanding officer District of New Mexico on the subject-matter of the raids to and from Mexico, made by the Indians, to which I invite attention. In general, the Indians in Mexico have been quiet, anything like hostilities being confined to small raids and robberies, but since this report was completed I have received intelligence of the outbreak of about twenty miles from Ojo Caliente. They killed a small guard over public property, drove off the stock, and since, news, more or less exaggerated, received from a settler in Grant County, near the line of the Division, an account of a fight he had with the band, and that the band was driven off, and ten persons killed. The whole garrison of the Division which is near to the scene of difficulty, is out after these reports. Official reports are yet received which enable me to state that the exaggeration there may be (as there always is) in the reports of such troubles. I expect every moment to get some authentic information. I consider the force at Bayard quite sufficient to deal with the force of Indians, if no larger than officially reported to me. The commanding officer of the Ninth Cavalry, commanding that district, is a very efficient officer, and thoroughly acquainted with the situation, and with the troops at his command this morning. He has been instructed to use all means to hunt down and recapture this band.

The chiefs of the staff department at these headquarters are working with efficiency and thoroughness, and they have, as far as possible, to have, the entire confidence of the government. I have ordered a roster of the department, and a field-return of the troops in it.

I am, sir, respectfully, your obedient servant,

JOHN POPE,

*Brevet Major-General, U. S. A., Commanding.*

WHIPPLE,

*Adjutant-General,*

*Military Division of the Missouri, Chicago, Ill.*

The outbreak of the White River Utes has occurred since this report was made, but as the troops concerned in the fight with them are now in the hands of the Lieutenant-General from the Department of the Platte, and the nearest of that department nearest to the White River Agency, is not known to me. It is not improper to state, however, that under the present Indian system and policy such outbreaks are of a temporary nature of things, to occur from time to time, and are likely to increase in frequency and violence as time goes on. I

do not venture to express an opinion as to the causes, though I entertain strong convictions about it. It is very certain that so long as large bodies of Indians, fully armed and equipped for war, are kept at Indian agencies, the temptation to break out from time to time is irresistible, and before such outbreaks can be put down severe losses and great suffering must be expected.

I have always been of the opinion, and have frequently urged it officially, that all reservation Indians should be dismounted and disarmed and then properly fed. In this way only can the horrors of these outbreaks be prevented, and the sooner the fact is recognized the sooner we shall be safe from them. Until it is recognized and acted on we must not be surprised at their frequent recurrence. The small force of the Army is wholly insufficient to garrison these agencies with any force at all sufficient to overawe or control the large bodies of Indians on the reservations mounted and armed as they are, and in each case much time (time fatal to human life and property) is necessarily lost in concentrating out of our meager Army a force large enough to deal with them. As above stated, the only safety under present circumstances and the present policy is to disarm and dismount all reservation Indians at once so that they cannot even be tempted to these outbreaks. The necessary condition to this act is that the Indians be sufficiently fed and that the appropriations for that purpose be not only ample but made regularly and in time for such subsistence to be delivered to the Indians when needed.

	Area. Square miles.	Population.
Kiowa and Comanche .....	4,639	2,978
Connecticut .....	4,750	537,454
Cherokee .....	7,861	18,673
Massachusetts .....	7,800	1,457,351
Creek .....	35,197	57,674
Choctaw .....		
Cherokee .....		
Chickasaw .....		
Kansas .....		
Kiowa and Comanche .....	34,000	705,606
South Carolina .....	33,809	1,680,637
Indiana .....	35,000	628,915
Maine .....		

### SPECIAL REPORT OF COL. EDWARD HATCH.

HEADQUARTERS DISTRICT OF NEW MEXICO,  
*Santa Fé, N. Mex., September 6, 1879.*

SIR: In compliance with your indorsement of August 11, 1879, referring to me, for investigation and report, certain papers from the Department of State, relative to crimes alleged to have been committed in the frontier States of Sonora, Chihuahua, and Tamaulipas by persons either coming from or flying to American territory, I have the honor to report as follows:

I respectfully invite attention to the indorsement of the commanding general Department of Texas, referring to the territory adjacent to the Rio Grande. It is evident there is some misconception as to the limits defined for the Department of the Missouri.

Under instructions from Division of the Missouri, the northern limit of the District of New Mexico is designated as described in inclosed copy of letter from division headquarters dated March 1, 1878. From this it

that the Department of the Missouri has no jurisdiction at Izarrio, 25 miles south of Fort Bliss, and is not responsible for at San Ignacio, Guadalupe, Quitman, Rice Station, and same, though the troops of this command have always promptly to any call of the citizens in that region whenever impending danger from hostile Indians.

By General Ord's report it will be also seen that no troops of the Department of Texas are stationed directly on the Rio Grande River at a not very distant from Fort Clark, though scouts are employed as far as Paso del Norte, leaving nearly 500 miles of river unprotected for which, if the same instructions are in existence in that Department that are in force in the District of New Mexico, the Department is responsible.

The nearest permanent garrison to the Rio Grande River in western Texas, is 140 miles from Fort Quitman and 100 miles from El Paso del Norte. Cola del Aquilla (which is presumed means Eagle Creek) is 100 miles from the Rio Grande. I am informed a company is stationed there. On the right bank of the river, beginning 20 miles from Fort Quitman to del Norte, has always been a favorite resort

for troops stationed at Eagle Springs are a long distance from the most serious troubles near San Ignacio. It is not known whether there have ever occupied stations directly on the Rio Grande from El Paso to Paso del Norte. What the effect would be in checking wild Indians were troops stationed upon the river, can only be ascertained by making the experiment. The troops of this district are not available for the frontier mentioned.

It is respectfully invited to the misconception apparent of the Department in Mexico, regarding marauding Indians of the frontier of New Mexico. It seems accepted that all Indians are from the Indian reservations who commit depredations in Mexico. It is not conclusive, though roaming Indians, when hard pressed, sometimes come from the reservations not recognized as belonging to the United States. There are bands of wild Indians made up of the different Apache and other tribes, Lipans, Kickapoos, and others, who have never been in the Indian reservations, common enemies of all. They roam over a vast portion of the frontier of Mexico, Texas, Arizona, and New Mexico. The citizens of the bordering Mexican States make what they can for themselves with these Indians, lasting, perhaps, a few years, probably without the consent of their governments. The peace is construed to mean that they may live quietly in the mountains of Mexico as long as they are made upon the Mexicans; as to raiding on United States territory, there is no provision that they shall not. These Indians are usually driven into Mexico, when raiding in New Mexico. Our troops (see reports of scouts as follows):

Major Carroll, Ninth Cavalry, forwarded September 9, 1878.  
Major Beyer, one forwarded December 19, 1878, and one forwarded January 27, 1879.

Major Wright, forwarded June 25 and July 8, 1879, respectively.

It is not the responsibility can attach to our government for the acts of these Indians. The troops are not allowed to follow them on Mexican territory. No concert of action exists between the forces of the two countries in view to the suppression of Indian raids on New Mexican territory. Mexican Indians, so called by our soldiers for the reason that they are understood to live in the mountains of Chihuahua. Evi-



dence of the fact exists to-day at Fort Stanton, where a small band of Lipan Indians, five in number, were found on the Mescalero Agency and taken as prisoners to await instructions from the Indian Bureau for their disposition. This is the present condition of the frontier. The only remedy for the Mexican Government is to drive the Indians from their territory. On this side of the line they will be pushed to the extremity of surrendering, when they can be placed upon reservations. The Mexican authorities refer to the hostile Indians being armed with needle-guns by the United States Government. This statement is simply absurd—too preposterous to be thought of for a moment. Our Indian scouts are armed with government arms, and are used to pursue the very Indians accused of marauding. The hostile Indians have no trouble in purchasing arms and ammunition from Mexicans trading with the Indians.

Deserters in our Army, in nearly every case, flee to Mexico with their arms, horses, and equipments, where they are sold by them to Mexicans, and probably find their way into the hands of the Indians. Stolen arms on this side of the line also find their way to the Indians.

Attention is invited to the raid in which Antonio Silva, Rafael Aphela, and others were killed, where it is stated the Indians took refuge in the mountains of Chihuahua. This alone is evidence sufficient that these Indians are a portion of those referred to, for whom the United States Government is not responsible.

The request that a band of Indians once belonging to the White Mountain Indians, who have for some years lived in Mexico, and who were recently pursued into Mexico by our troops, shall be delivered to our officers near the frontier—we consider the Mexican Government responsible for them. When pursued, they take shelter near Janos, Chihuahua.

Referring to the robbers who infest the frontier; there are undoubtedly a great many of the worst characters. The military are powerless, however, to do anything with them. When on United States territory they are under the jurisdiction of the local laws of the States and Territories. A glance at the names will discover that they are nearly all of Mexican descent. It is a matter of indifference to them whom they rob, Mexican or American.

The treaty settles the matter. If the individual claims that he is a citizen of America, he cannot be given up by the United States authorities under the provisions of the extradition laws. This applies to Mexico also.

Probability of our government obtaining a criminal who has fled to any of the frontier Mexican States is slight, should he be of Mexican descent. Not that the Mexican officials are not inclined to do so; it is beyond their control to produce him when the people or his relatives are inclined to shelter and protect him. As evidence, take the mob at San Elizario; very few, if any, have ever been obtained by the Texas authorities on writs of extradition, though there is no reason for supposing the Mexican governors were inclined to turn them over.

If necessary, a volume can be obtained from Texas, New Mexico, and Arizona, from settlers of that State and Territories, of similar statements made by the Mexicans, of raids, murders, and robberies upon American soil. The misfortune is that the Indians and robbers are merely common enemies, who take advantage of treaty-relations of two countries, a sparsely populated frontier, on the Mexican side inadequately protected. Were the United States troops allowed to follow the Indians when in pursuit, or was the Mexican Government strong

enough to prevent the occupancy of their mountain regions by Indians, these bands of Indians would be exterminated.

Very respectfully, your obedient servant,

EDWARD HATCH,

*Colonel Ninth Cavalry, Commanding.*

The ASSISTANT ADJUTANT-GENERAL,

*Department of the Missouri, Fort Leavenworth, Kans.*

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## REPORT OF BRIG. GEN. E. O. C. ORD.

HEADQUARTERS DEPARTMENT OF TEXAS,  
*San Antonio, Texas, October 1, 1879.*

**SIR:** I have the honor of submitting my annual report, with abstracts and documents, marked A to E, inclusive.

**A.**—Roster of troops, indicating posts, sub-posts, &c., and their garrisons.

Of the thirteen sub-posts, or camps, eight have been established in the District of the Pecos, by the district commander, under instructions from these headquarters, of April 30, 1878, with a view of making safe the mail-route and settlements in its vicinity, by forcing the Indians from that region and keeping them out of it. The intended result has, practically, been accomplished. All Indians penetrating the country have been so hotly pressed by the troops as to prevent their doing much damage—only three murders, by marauders, during the year. Last year there were seventeen in the region referred to.

**B.**—Movement of troops.

The good order in Mexico, and the cessation of raids from that country, has enabled a considerable portion of the troops, held in reserve to carry out the order of the President, dated June 1, 1877, to cross the border in pursuit of raiders, to be diverted for use in exploring our own wild country, and occupying the water-holes frequented by raiding bands from our own Indian reservations. Cut off from water, the Indians cannot traverse the country.

**C.**—Statement of expeditions and scouts, and the distances marched—total 40,100 miles; an increase over that in last report of 18,740 miles. The activity of the troops, in field service, is thus indicated at a glance.

I beg especial attention to reports—copies herewith marked F—from Lieutenant Bullis, Twenty-fourth Infantry, and Lieutenant McMartin, Twenty-fifth Infantry, in the matter of scouts made by them after raiders, on Texas ranches, from the Fort Stanton Reservation. The latter has led to instructions, dated September 9, 1879, from the Department of the Interior, “to use every effort to detect all Indians upon his (the Mescalero—Fort Stanton) reservation that engage in raiding, and recover and restore all property taken by them, and deliver the guilty parties to the proper authorities for punishment.” Those instructions are very good as far as they go; but as military officers, who pursue the Indian raiders, cannot (under the act of Congress promulgated in General Orders No. 71, Headquarters of the Army, Adjutant-General’s Office, series of 1878) aid in executing the law, or punishing criminals, they are not the “proper authorities” referred to. Therefore, I venture to suggest that some understanding in the matter be had with the proper civil authorities of Texas.

**D.**—Abstract of persons killed, wounded, &c., by Indians and Mexi-

cans since October 1, 1878. It exhibits a decrease in number of 34 since the last report, which enumerated 52—a gratifying result.

E.—Report of trials by courts-martial since October 1, 1878; from which it will be seen that the number of cases, for the past year, is materially less than for the preceding period; the number of military convictions, little more than one-half; that theft, and kindred crimes, heretofore frequent among colored troops, have perceptibly diminished; and that the number of desertions has not diminished—this last attributable, perhaps, to the arrival of enlisted men from the North, who do not like the hard work and discomfort of the desert country of West Texas, and, possibly, an intention of certain recruits, when enlisted at the North and elsewhere, to desert on reaching a convenient locality.

#### EXTRADITION.

By reason of revolutions the Mexican population along the river is of a mongrel character: deserters from the contending forces; Mexican soldiery sent to the border and there disbanded; remnants of bands of wild raiding, or refugee, Indians, who formerly found safety in the deserts and unexplored mountains of Mexico or Texas, and who have gradually learned to trade and mix with the people of its border towns; and smugglers—all go to swell the lawless element. To such a population, ordinary treaties, or modes of administering justice, will not apply, especially when it is considered that under the treaty of extradition now in force the local district judges are commissioners to extradite, and elected by a population more or less liable for extraditable offenses, committed on the opposite side. The conclusion is reasonable that when the existing treaty was made, the character and number of the border refugees was not understood. Moreover, under its provisions neither country is bound to extradite its own citizens, and, generally, to evade the penalties of the treaty, citizenship, to suit their necessities, can be proven by offenders.

The country in the vicinity of the banks of the Rio Grande is peculiar, and as little understood as is the character of the people. Along the lower river, ascending to Camargo, it is a rich valley, thickly timbered in the bottoms, with sheep and cattle ranches inland from the timber. Thence to Laredo it is broken, with small patches of good land. Above Laredo to the mouth of the Pecos it is a cactus belt, with streams few and far between, with little cultivation, except near San Felipe—there only by irrigation. The cactus belt and the plateau are well adapted to sheep-raising. Above the mouth of the Pecos, to the valley of San Elizario and El Paso, where again there are irrigable lands, the river cuts its way through wild and craggy mountain ranges and along the beds of immense cañons. Between the mountain ranges are plains, valleys, and gorges, rapidly undergoing exploration on the Texas side, and found well adapted to grazing. The ranges are much better supplied with water than was supposed, and in proportion as they are explored, valuable discoveries of precious metals result.

From the mouth of the river to El Paso, the population of the border counties is, with few exceptions, Mexican, or of Mexican origin. Americans are pushing west and northwest, and as soon as the new military road—much nearer the river—from Fort Clark to Fort Davis, now under construction by the troops of this department, shall have been opened, quite a number of cattle ranches will be established near and north of the Rio Grande, and along the Pecos. These are the people, with those living in the cities near to and on both sides of the river, for whose benefit a new treaty should be arranged; for their interests, as a rule, are identical in both countries.



## PROHIBITORY DUTIES.

bitory duties on animals and food work as much hardship as for the American citizens, for the reason that droughts on both sides of the river the same year. For instance, corn was cheap in Mexico and dear in Texas, and some furnished the government horses with corn bought in Mexico. When the price of corn was high, it was generally smuggled across. In 1877 and 1878, almost a famine prevailed in North Coahuila and Chihuahua, Mexican troops and horses had to be supplied from this side. High duties, their contractors, too, generally evaded them. Citizens who, during the seasons referred to, could not afford to buy corn, smugglers, had to pay enormous prices for their corn on the other side of the river. The drought is now prevailing. This year, again, the drought is in Texas, and the price of corn high. Of course a low price of corn, for food and stock, would be the remedy for this state of affairs, and would redound to the benefit of both governments, because then be paid upon a much larger amount of supplies, which, whether the poor or rich could buy. Now, owing to the small trade carried on, nearly all the heavy duties, both ways, are paid on the flocks and herds on one side of the river may starve to death on the other side of drought, because they cannot be driven across, where they can find food, without paying duties or undergoing the risk of

## RAILROADS.

difficult to convince the leading politicians in Mexico that the United States into that country will not be simply a road for hordes of barbarous and grasping Yankees to rush across the land, regardless of the rights of present owners or the independence of Mexico. They have an idea that railroad companies and the United States are generally government agents; that the roads are to be used to forward some special governmental policy—such as the opening of Mexico—and that Mexico is a country so much more rich and richer than the United States, and so thinly peopled in comparison with the poor and hungry Yankees, by thousands, are only waiting for an inlet to take possession of it. The contrary would prove true if one or more roads were built extending into Mexico—unless the comforts of the laboring classes should become improved—the flow of poor and underpaid labor would be in the direction of the United States. The peons, or operatives, of Mexico have the simple habits of the Chinese, and all ordinary labor in that country is paid less than one-half the wages that similar labor commands in the United States. Cultivated farms are found only where there is water for irrigation, and there are desert stretches of from twenty to fifty miles between the waters. In the little valleys, supplied with water from the mountains, towns or villages—according to the size of the valleys—find irrigable lands, where the non-progressive population could support life. To what extent the laboring classes would be benefited by the opening of our manufactures, were they able to earn the means to purchase, is a question which, in my opinion, could be settled before we expend large sums upon railroads.

There are areas of rich lands in certain districts—like the valley around Mexico—but they are occupied now by the toiling native population. The experience of numbers of Americans, who went to that



country to settle and have returned, is that there is no room there for American farmers.

#### MINES.

The extent and productiveness of the mines in Mexico, and the inducements, or encouragement, afforded American miners and mechanics to invest their time and money in mining enterprises in that country, are also questions which, in my view, should be thoroughly understood before citizens of the United States venture into such a country, beyond the protection of our own laws, to seek their fortunes. As I have remarked above, all ordinary labor is very cheap in Mexico; their miners will work for a few dollars per month; their mines are such as require capital to work them; the mining laws are peculiar, and their administration intrusted to local authorities not partial to Americans; and, in addition, taxes—export duties and assessments—are laid upon ores or bullion, with little regard to the interest of mining enterprises, or the future development of the country.

#### CROSSING THE BORDER.

I respectfully invite attention to the earnest and successful efforts of the Mexican authorities—especially those of Generals Trevino and Canales—to suppress raiding from their side of the river: the condition of affairs which rendered necessary the order, of June 1, 1877, to cross the border, in my opinion, no longer exists, as the Mexican Government has shown its ability and determination to put a stop to such invasions of the United States.

The President having, in his annual message of last December, referred to his desire, as soon as practicable with due regard to the protection of the lives and property of our own citizens, to recognize this ability on the part of the Mexican Government, is my reason for here referring to the subject, and therefore I recommend such recognition. If such action should be had, I am of the further opinion that the discretionary authority, similar to that exercised by the department commander previous to the issue of the order, will suffice, provided the Mexican Government will continue the same force along their frontier that has been found necessary to effectively restrain lawless bands from raiding into our territory.

#### ADDITIONAL QUARTERS.

In 1877, six companies of cavalry and four of artillery were ordered to this department, three companies of cavalry left the department, and thus the strength of my command was increased by seven companies. Moreover, the garrisons of Forts Quitman, Bliss, and Richardson, and one company from Fort Griffin, have been called in, so that, allowing for quarters since erected for two companies, I have eleven additional companies to quarter, and no fit place for that purpose. I need not say that it is very disheartening to the officers to be compelled, through the cold winters and hot summers of West Texas, to keep their wives and children in tents, shanties, or brush huts, or to have them packed in attics. The want of quarters for so many necessarily crowds all the others, and a glance at the amount of service—40,100 miles of scouts and expeditions, 18,740 miles more than last year—performed by the troops, in a country like West Texas, ought to secure to them some comfort, after a return from their long and dreary marches over trackless wastes.

such discomfort, even under rather favorable circumstances of eleven officers who reached the department with only four remain, and only one of them has him.

As is consistent with propriety, urged the necessary appropriation of two hundred thousand dollars for four additional posts to replace those which have been vacated and it is proposed to vacate as rapidly the larger settlements as the protection of new settlements may require. Four posts would provide quarters for the eleven companies provided.

I am, very respectfully, your obedient servant,

E. O. C. ORD,

*Brigadier-General, Commanding.*

MAJOR-GENERAL,

*Adjutant-General, Division of the Missouri, Chicago, Ill.*

# REPORT OF MAJ. GEN. W. S. HANCOCK.

REPORT OF THE MILITARY DIVISION OF THE ATLANTIC,  
GOVERNOR'S ISLAND, NEW YORK HARBOR,  
October 22, 1879.

In obedience to the instructions contained in your letter of the 10th inst., I have the honor to submit the following report of operations of the Military Division of the Atlantic during the past year. The geographical limits of the division remain the same as last year, and it is divided into two military departments—east and west. The former being under my immediate command, and the latter under that of Brig. Gen. C. C. Augur, with headquarters at New York.

The following table shows the strength of the division on the 30th of September, by the returns of that date, as follows:

	Commissioned officers.	Enlisted men.
Division of the Atlantic.....	9	11
Department of the East.....	232	1,893
Department of the West.....	114	784
Total.....	355	2,688

The following tabular statement showing the distribution of these troops

Department of the East, the post of Fort Foote, Md., was dis-  
garrisoned post November 10, 1878, and its garrison (Bat-  
tery F, Artillery) transferred to Fort Ontario, N. Y.; Battery F,  
Artillery, the garrison of the latter post having been sent to Fort  
York Harbor. In the spring of 1879, the Twenty-second  
Infantry, the posts of Fort Porter, N. Y., and Forts Wayne,  
Mich., and Mackinac, Mich., was transferred to the Depart-  
ment of the West, and was replaced in this department by the Tenth Unit-  
ed States Infantry. In assigning the Tenth, however, to its stations on  
the coast, it was decided not to regarrison the post of Fort Gra-  
ham and an additional company to Fort Wayne, at which post

there will be ample quarters, when the new buildings authorized to be constructed there during the present fiscal year have been completed. This transfer of regiments was effected pursuant to General Orders, No. 38, Headquarters of the Army, of March 31, 1879.

Under instructions from the General of the Army, dated July 26, 1879, and Special Orders, No. 34, from these headquarters, of July 29, 1879, Fort Wood and the public buildings on Bedloe's Island, New York Harbor (except one building retained for the use of the ordnance sergeant) were transferred to the Treasury Department for use by it as a marine hospital for the port of New York, subject, however, to recall at any time when the military necessities may require, and subject, also, to the operation of the joint resolution of Congress, approved March 3, 1879, designating Bedloe's Island as a site for the colossal statue of Liberty. So soon as this transfer was effected, the small artillery detachment at the post was withdrawn, and the only army official now there is an ordnance sergeant.

Under instructions from the General of the Army, of August 22 and 30, the post of Carlisle Barracks, Pa., has recently been transferred to the custody and control of the Interior Department, to be used as a school for the education of Indian children, reserving, however, the right of the War Department to resume possession of the post whenever needed for military purposes, or when required by Congressional action. The War Department having, in addition to the public buildings, directed certain property at Carlisle Barracks pertaining to its staff departments to be transferred to the Interior Department at a proper valuation, a board of officers is now in session to appraise the value of such property.

In the Department of the South, the Eighteenth Infantry, nine companies stationed at Atlanta, Ga., and one at Chattanooga, Tenn., was transferred to the Department of Dakota in the month of April, 1879, but was not replaced in this command by another regiment. Under instructions, however, from the General of the Army, the posts of Oglethorpe Barracks, Savannah, Ga., and Charleston, S. C., were discontinued as garrisoned posts, and their garrisons (headquarters, Light Battery F and Batteries E and I, Fifth Artillery, at Charleston, and Battery D, Fifth Artillery, at Savannah) were transferred to McPherson Barracks, Atlanta, formerly garrisoned by the Eighteenth Infantry, where they now remain. The military post of Chattanooga has not been regarrisoned, but is now in charge of the superintendent of the national cemetery at that place.

On the 1st of May, Company F, Thirteenth Infantry, was transferred from Baton Rouge Barracks, La., to Newport Barracks, Ky., and on the 6th of June the post of Baton Rouge was discontinued, and the two companies of the Thirteenth Infantry then stationed there were transferred, Company K to Little Rock Barracks, Ark., and Company B to Mount Vernon Barracks, Ala. Under instructions from the Secretary of War, a company of infantry has been stationed for some time at Hot Springs, Ark., pursuant to a request made by the superintendent of the reservation there and the United States commissioners, who had cause to apprehend interference with the performance of their duties; the report of the department commander, herewith, gives full particulars of this matter.

In view of the probable reappearance of yellow-fever epidemic in the South, timely steps were taken this year to so locate the troops as to prevent, as far as practicable, danger to them from that scourge. On the 16th of June, the headquarters, and Companies A, D, H and I,



Thirteenth Infantry, were removed from Jackson Barracks, La., into a summer camp at Atlanta, Ga., and Batteries B, L, and M, Fifth Artillery, were moved from Fort Barrancas, Fla., to McPherson Barracks, Atlanta. These companies of artillery and infantry are still at the points mentioned, but it will doubtless soon be safe to return them to their proper stations. The garrison at Key West was ordered to move at once to Fort Jefferson, Dry Tortugas, in case yellow fever should make its appearance; but I am pleased to say there has been as yet no occasion to disturb the garrison on the account mentioned. There have been no signs of yellow fever or any epidemic so far this year at any military post in the Department of the South.

I invite attention to Brigadier-General Augur's report and its inclosures, herewith, which specify in detail the operations in the Department of the South for the past year, and will be found to contain much that is interesting. I concur with him in his recommendation that Congress be asked to grant the widow of the late First Lieut. H. H. Benner, Eighteenth United States Infantry, an adequate pension. The circumstances of that officer's death are too recent to need special recapitulation in this report. I beg also to add my commendation of the conduct of Second Lieut. C. S. Hall, Thirteenth Infantry, who volunteered for the same service, and after the death of Lieutenant Benner succeeded him in the perilous duty.

I inclose the reports of the chiefs of the staff departments at these headquarters, which exhibit very fully the operations of their departments during the year.

Inspection duty in all branches of the service within my command has been industriously performed during the past year. I ask attention to the various suggestions made by Inspector-General Nelson H. Davis and by Maj. Richard Arnold, acting assistant inspector-general, in their reports herewith. Colonel Davis's suggestions as to clerical assistance in his department are judicious, but I understand that the general subject of this branch of the military service is now receiving consideration by the honorable Secretary of War, and that it is his intention to recommend legislation for the benefit of clerks of the Adjutant-General's as well as Inspector-General's Department.

For two or three years past Major Arnold has recommended that a suitable officer of the Ordnance Department be detailed to make an inspection of and recommend final disposition of the large amount of property and stores belonging to that department (guns, carriages, implements, &c., of obsolete pattern), of little or no value, at the various posts, and only burdening the returns and occupying buildings that could be used for better purposes, or lying in damp casemates to rust and perish. I would solicit attention to this matter, with a view to Major Arnold's suggestion being carried into execution. I also ask attention to his suggestion as to the propriety of the passage of a law retiring those ordnance sergeants of the Army who have merited such a privilege by years of continuous meritorious service. I concur in this, and also in the recommendation of the inspector-general of the division, that such law should apply to all old and deserving sergeants in the Army, line and staff. As it now stands, these meritorious non-commissioned officers have, if separated from the service, but little prospect for their old age, and it would only be just that the country, which they have long and faithfully served, should provide for them when incapacitated for active service.

I concur, too, with the judge-advocate of the division as to the propriety of a change in the matter of sending all soldiers convicted of felo-

nies to State penitentiaries. While it is no doubt eminently proper to send hardened offenders to these penitentiaries, yet, in cases of first offenses, and where there are evidences that, under judicious treatment, a reformation might be effected, I think it would be better to send such young offenders to an institution such as that referred to by the judge-advocate, viz, the State reformatory institution at Elmira, N. Y. For soldiers convicted of purely military offenses, of course, the military prison at Fort Leavenworth, Kan., is a proper place of confinement.

The report of the judge-advocate contains, in addition, some excellent suggestions as to the jurisdiction of the United States over its military posts in New York Harbor, and their docks, wharves, &c., and in reference to a much-needed sea-wall around Governor's Island, and it is hoped that the honorable Secretary of War will renew to Congress his recommendation for this sea-wall; but the limits of this report will not permit more than this casual reference to the subject.

The reports of the chief quartermaster, medical director, chief paymaster, and chief commissary of subsistence indicate a satisfactory condition of affairs in their departments.

I inclose, also, a report by Capt. H. G. Litchfield, Second Artillery, who has been on special duty at the headquarters Department of the East since November, 1878, in connection with rifle practice. The great improvement in this practice by the Regular Army during the past year is now a matter of public knowledge, and it is, therefore, needless for me to enter upon it in this report, more especially as on the 10th instant I forwarded, for the information of the General of the Army, full reports of the shooting of the several "Army teams," assembled at Creedmoor, L. I., to participate in the international military match, shot there on the 18th of September last. Although the teams of the Regular Army were unsuccessful in that match, yet they gave ample evidence of their skill and persistent practice, not only in it, but in others in which they took part and were successful. If the great encouragement in this direction shall be continued, highly beneficial results will surely follow.

The discipline and general condition of the troops in this command, as reported to me, are satisfactory and commendable. The diminished strength of artillery companies at many of the sea-coast forts is a serious hinderance to artillery practice and instruction, especially with heavy guns.

The General of the Army having expressed an opinion that there should be at each garrisoned fort at least two companies of troops, steps looking to that end have already been taken, but the deficiency of quarters at many of the posts has delayed the earlier fulfillment of that intention. Orders have already been issued withdrawing the company of the First Artillery from Fort Independence and sending it to Fort Warren, Mass., where there is already one company of that regiment. Estimates for such additional buildings and repairs as may be required at those posts to be so garrisoned are now being prepared, and a proper opportunity is only awaited to carry the programme decided upon into execution. When this has been accomplished, there will be but little reason on the part of post commanders for not requiring a frequent drill and instruction of the troops, as is contemplated by existing orders and regulations. The inspectors-general do not make a favorable report in regard to such drill and instruction, but I am induced to believe that much of this backwardness is due to the very small companies and few of them, in many instances only one, at some of the posts. I am satisfied, however, that at some posts having more than one company the



ent instruction and drill must arise from lack of due inter-  
sures will be taken to correct this where it is found to

sir, very respectfully, your obedient servant.

WINF'D. S. HANCOCK,

*Major-General, Commanding.*

TANT-GENERAL OF THE ARMY,

*Washington, D. C.*

## REPORT OF MAJ. GEN. J. M. SCHOFIELD.

HEADQUARTERS DEPARTMENT OF WEST POINT,

UNITED STATES MILITARY ACADEMY,

*West Point, N. Y., October 18, 1879.*

re the honor to submit the following report upon the condi-  
Military Academy, and the progress made in educational  
improvements during the past year.

### STATE OF INSTRUCTION AND DISCIPLINE.

uction in the several departments of the Academy during  
ar has been fully up to the previous high standard of the  
and the progress of the several classes has been satisfactory.  
state of discipline in the corps of cadets has also been all  
e desired, with the single exception that the chronic vice or  
ot been wholly suppressed. This offensive practice, which  
een a cause of reproach to institutions of learning, is grad-  
g before the more enlightened and refined sentiments which  
elations between young gentlemen of the present day. It  
hat this cause of reproach will soon disappear forever from  
Academy.

### COURSE OF INSTRUCTION AT THE ACADEMY.

re introduced two years ago by the restoration of instruc-  
English language in the first year's course, has proved ben-  
rill secure a higher standard of general education among  
es. This change and the others which have been recom-  
the Academic Board, to take effect in due course of time,  
elieved, give the most profitable employment of the four  
ed to the education of young officers of the Army, based  
eliminary education now prescribed as the necessary quali-  
admission to the Academy.

### POST-GRADUATE INSTRUCTION.

ly supplement this course of instruction at the Academy,  
e that young officers be given reasonable facilities and en-  
t in all arms of the service to continue their professional  
nection with the practical application of military princi-  
out such opportunities little further progress is generally  
leaving the Academy, and much that has been learned is  
Good opportunities are now afforded for such a post-gradu-

ate course of studies to the young officers who are detailed as instructors at West Point, and to those who enjoy the benefits of the Artillery School at Fort Monroe, as well as to those of the engineers and ordnance. It is greatly to be desired that a similar school for the infantry and cavalry may be established at no distant time.

#### ADMISSION OF CADETS.

As the standard of general education throughout the country has gradually advanced, the qualifications of candidates for admission to the Military Academy have naturally shown corresponding improvement. On the other hand, the rigid examination for admission to the Academy have doubtless had their due weight in stimulating to a more thorough method of instruction in the public schools where the young men are generally prepared for admission to the Academy. The influence thus exerted, though perhaps not very great, is felt in all parts of the country, and hence is generally beneficial. At the same time, the rule established by law as a general one, and now made nearly universal by the recent practice of the War Department, of making cadet appointments a year in advance of the time for admission to the Academy, gives to every appointee of fair ability sufficient time to make the necessary preparation. The doors of the Academy are thus left as wide open to young men of talent as they were when the standard of admission was much lower. It is respectfully recommended that this practice be continued.

The standard of admission to the Military Academy must, doubtless, continue to be practically determined by the general state of education in all parts of the country. It has risen to its present level with the growth of general education, and it cannot be arbitrarily forced beyond the level which the general education of the youth of the country may at any time determine. It must be kept at a point which will permit the least favored sections of the country to send young men to the Academy duly qualified for admission. The present equitable apportionment of cadetships among all the States and Territories in proportion to population is so just and so important a feature of the present system that it cannot be sacrificed for the purpose of securing a higher standard of admission to the Academy. Yet, while the minimum standard of admission to the Academy cannot be materially changed, if there are any among the candidates who possess much higher qualifications than this standard requires, there seems no sufficient reason why they may not be given the full benefits of their superior attainments by being admitted to a higher class in the Academy. It does not seem necessary that either they or the government be subjected to the expense and loss of time involved in their going over again a course of studies with which they are already familiar. Young men of the age, intelligence, and habits of industry implied by the possession of such higher qualifications would find no difficulty in the course of practical military instruction, though they were given only three years for the course to which four years are allotted for younger men, with less preparatory training. It might be that few or none of the candidates would at first prove to be duly qualified to enter the third class, yet it might reasonably be expected that the opportunity to take this advanced standing at the start would lead to the necessary preparation therefor by some proportion of the candidates who have favorable opportunities for early education. It would seem but just that such higher attainments should be duly recognized in admissions to the Academy, no less than in graduation.



My present purpose is simply to suggest this as a subject worthy of future consideration in connection with the general question of increasing to the greatest practicable extent the usefulness of the Military Academy to the entire country.

#### SELECTION OF CANDIDATES.

The method adopted by some members of Congress, which seems to be becoming more general every year, of selecting their nominees by competitive examination among the young men of their respective districts, has resulted in a marked improvement in the average qualifications of candidates. In this respect this method of selection is highly beneficial. It is, however, liable to one source of injury, against which it is important to guard, especially since the method of selection seems likely to become very general, if not universal. While the member of Congress is relieved by this means from the very difficult task of selecting a candidate who shall certainly possess the requisite mental and physical qualifications, his responsibility still remains for the moral character of his nominee. Good character and manly deportment are certainly no less important than scholarship and physical health. Bad habits contracted by a young man already twenty or twenty-one years of age are not easily corrected, and they are more likely than any lack of mental ability to bring mortification and disappointment to those who are most interested in his honorable career. If manly character, physical perfection, mental ability, and scholarship can all be given their due weight in the competition for appointments, then only unmixed good may be expected to result from this method of selection. My desire is to simply invite the attention of the honorable Representatives in Congress to this subject, which might otherwise escape the attention of some of them in making selections by competition, as it could not do where the selections were made from their own personal knowledge of the applicants.

#### EDUCATION OF OFFICERS FOR THE MILITIA OF THE UNITED STATES.

I beg leave to suggest, for the consideration of Congress, that the great facilities now afforded by the Military Academy might, with comparatively small additional cost, be made available for the education of a considerable number of young men in excess of the annual vacancies in the Army, to be returned to their respective States for service in the organized militia. It is believed that the States could not fail to derive great benefit from the service in their militia of a corps of officers thus educated, while the Military Academy and Regular Army of the United States would thus be brought into more intimate relations with the great body of citizen soldiers who must compose the armies of the country in time of war. These young men would not necessarily pass through the higher course of studies necessary to qualify them for the engineers or ordnance, but could graduate at the end of two or three years qualified to command infantry, cavalry, or field artillery. From the whole number of young men thus educated might be selected those best qualified to receive the higher education required for service in the scientific corps of the Army.

The machinery of a complete military academy is too expensive to be maintained separately by each of the States. Why not let all derive some direct benefit, at slight expense, from the one national military school?

## MATERIAL IMPROVEMENTS.

The material improvements authorized under appropriations made by the last Congress are rapidly progressing.

The new system of sewerage was completed early last spring, and is believed to be as nearly perfect as possible. It has already been attended by a very marked sanitary improvement, amounting, among the enlisted men and their families, to a decrease of 60 per centum in the average number of cases of sickness.

The new water-works are already far advanced, and will be completed before the commencement of the next dry season. Hereafter, the supply of pure water will be abundant at all seasons of the year.

The walls and roof of the main building, and one wing of the new cadets' hospital, will be finished this season. This work will about exhaust the present appropriation. An estimate has been submitted of the money necessary to complete the work now so far advanced, viz, that upon the main building and one wing. It is recommended that this sum be appropriated and that the work be finished without further delay, leaving the question of building the other wing of the hospital to be decided after other improvements of more pressing necessity have been made.

The most pressing need of the Academy at this time is an addition to the cadets' barracks. Next in importance is new barracks for the cavalry detachment; and, third, some additional quarters for officers. Explanations of these several necessities have been made in my letter accompanying the annual estimates.

I respectfully invite the attention of the War Department and of Congress to this important subject, in which is involved the health and simple comfort of the cadets, the soldiers, and the young officers.

## CONCLUSION.

In concluding this report, I take pleasure in expressing my high appreciation of the faithful and efficient manner in which the officers of the Academy have performed their important duties.

I am, General, very respectfully, your obedient servant,

J. M. SCHOFIELD,

*Major-General, U. S. A.,*

*Superintendent Military Academy, Commanding.*

The ADJUTANT GENERAL U. S. A.,  
Washington, D. C.

## REPORT OF THE JUDGE-ADVOCATE-GENERAL.

WAR DEPARTMENT,  
BUREAU OF MILITARY JUSTICE,  
October 8, 1879.

SIR: In compliance with circular of the 6th ultimo, I have the honor to furnish the following report of the business of this Bureau for the year between October 1, 1878, and October 1, 1879:

Number of general court-martial records received, reviewed, and registered...	1, 673
Number of reports made and opinions furnished upon court-martial proceedings, applications for remission of sentence, &c., and upon the miscellaneous questions of law referred to the Judge-Advocate-General for opinion by the Secretary of War.....	898
Number of official applications from the War and Treasury Departments for abstracts of proceedings of trials, &c., answered.....	1, 087
Copies of records furnished under the 114th Article of War, &c., pages.....	10, 553

The following schedule, which is similar to the one presented in my last annual report, exhibits the number of convictions in the Army of the offenses indicated, as shown by the records of general courts-martial received at the Bureau during the past year:

For absence without leave.....	289
For advising soldier to desert.....	1
For allowing prisoner to escape.....	6
For assault and battery.....	72
For assault with intent to kill.....	10
For breach of arrest.....	8
For desertion.....	378
For disobedience of orders.....	100
For disrespect to superior officer.....	29
For drunkenness.....	138
For drunkenness on duty.....	201
For embezzlement, &c.....	10
For failure to attend drill, roll-call, &c.....	81
For larceny.....	117
For mutiny and mutinous conduct.....	8
For neglect of duty.....	49
For presenting fraudulent claim.....	2
For offering violence to superior officer.....	9
For quitting guard or post as sentinel.....	107
For quitting platoon or division without leave.....	7
For selling, losing, or wasting government property.....	96
For sleeping on post.....	64
For "conduct unbecoming an officer and a gentleman" (not included under previous heads).....	10
For disorders, &c., charged as "conduct prejudicial to good order and military discipline" (not included under previous heads).....	462
For miscellaneous (not included under any previous head).....	41

By comparing this list with that contained in my last year's report, it will be perceived that the cases of convictions of desertion are increased by twenty-four. My examinations of the records of trials induce the belief that the principal or most conspicuous causes of desertion in the Army are: 1, drunkenness, or rather indulgence in intoxicating liquors; 2, oppressive or injudicious treatment of soldiers by non-commissioned officers, and especially first sergeants, of companies, invested with an excess of authority. If, on the one hand, no enlistments were made except of men known to be of confirmed habits of sobriety and assured moral character, and, on the other hand, the wants and interests of soldiers were uniformly investigated and attended to by their company officers *in person*, the men being authorized and encouraged to have recourse *directly* to their officers whenever aggrieved or needing advice, and the non-commissioned officers precluded from exercising any form of arbitrary power over their inferiors, the number of desertions in the Army would, I am confident, be very considerably diminished. And in this connection I would express my concurrence in the views of Major-General McDowell on the subject of the causes and cures of desertion, set forth in General Order No. 3, issued from the headquarters of his Division, dated June 23 last.

I take pleasure in bearing testimony to the constant and valuable work accomplished by my Assistants, as well as by the clerks and other persons employed at the Bureau, during the year.

The officers of the corps of Judge-Advocates not on duty at the Bureau have performed their varied and important duties with their usual efficiency, so far as is known to me. Reports of judge-advocates (and acting judge-advocates) of military departments, so far as received, are herewith inclosed for such reference as may be desired, and as illustrating the character of the services required of these officers. It is much to be regretted that this class of officers cannot be furnished in all cases

with suitable libraries of legal works of reference, to be kept at the department headquarters. Frequently called upon as they are, in the course of their duties, to examine the statute law and rulings of the courts of the States and Territories included in their departments, to advise upon questions of law arising in the administration of the department commands, to prepare military charges and conduct military prosecutions, as well as occasionally to assist in the preparation of cases for trial or in the defenses to be made by officers sued or prosecuted in the civil tribunals, these Judge-Advocates should, it is deemed manifest, be furnished with a selection of legal treatises, reports, and statutes for reference and study; and to deny or unreasonably restrict them in this respect, is both unjust to themselves as skilled and faithful officials and prejudicial to the interests of the military service. Such a course may also induce an unnecessary public expense in the retaining and paying of lawyers in cases where the services required might be as well performed by the judge-advocates were they supplied with the necessary tools of their profession. In view of these considerations, applications for an appropriation for the purchase of law libraries for department headquarters have been repeatedly made by me and approved by the Secretary of War, but have not been favored by Congress. The very small contingent fund at present allowed to the Bureau, \$250, even if legally applicable, would not be sufficient for this purpose; indeed, the same does not suffice to provide the Bureau with the proper books for its own use, since from this fund it must also supply itself with the stationery and furniture, and meet the various incidental expenses, required for the office in Washington. Permit me to ask that the advisableness of supplying the headquarters of military departments with the libraries indicated may be brought to the consideration of Congress.

In connection with this report I desire again to call the attention of the Secretary of War to the amendment of the one hundred and third article of war, which has heretofore passed the Senate, but has failed to go through the House of Representatives (though favorably reported by its Military Committee), and the adoption of which, as settling a protracted controversy, is, in my judgment, imperatively called for.

The amended article, as accepted and passed by the Senate, is as follows:

A BILL to amend the one hundred and third article of war.

*Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled,* That the one hundred and third of the rules and articles of war be, and the same hereby is, amended so as to read as follows:

ARTICLE 103. No person shall be tried or punished by a court-martial for any offense committed more than two years, or in a case of desertion three years, before the arraignment of such person for such offense, unless he may meanwhile have absented himself from the United States, in which case the time of his absence shall be excluded in computing the period of the limitation.

I scarcely need again remind the Honorable Secretary of the singular anomaly dwelt upon by me in former reports, that while the prosecution of all other military crimes is admitted to be limited by the existing article to the period of two years therein prescribed, the crime of desertion has been heretofore held and treated by the majority of commanders in the Army to be practically unaffected by the limitation, so that a deserter may be brought to trial at any time after his offense, or, in other words, remain liable to arrest and punishment to the end of his life. Thus, under this doctrine and practice, a soldier of the war of 1812, who may have deserted and be still alive, may at any moment be apprehended, tried by court-martial, and sentenced to a term of imprisonment, though by an exemplary and valuable life of more than half a century he may have

and over for the dereliction of his youth. In other words, under a liability from which a soldier guilty of mutiny or in battle, or a civilian guilty of manslaughter, robbery, rape, high treason, is exempt under the existing law of the land. "of limitation," as observed by the United States Supreme Court upon sound policy, and tend to the peace and welfare of the country. Wharton remarks of them that they are "acts of amnesty and should be liberally construed in favor of the defendant," and at the same time "checks imposed by the State itself to exact vigilant activity and to prevent the recurrence of such offenses." They are indeed found in all modern codes as the result of sound policy; and for our *military* laws to exclude from their application any particular class of offenders against military discipline would be unworthy the dignity of the government, as well as to the interests of the military service in inducing a lack of energy in the arrest and punishment of guilty persons. It is well known to the Secretary of War that it has always been the policy of the Judge-Advocate-General, (my predecessor in office, as well as the existing military statute of limitations—the article of war mentioned—is a *general* statute applying to desertion in the same manner to the same extent as to all other military offenses, and that conclusion has been held and expressed by the honorable Attorney-General in three successive official opinions, and indeed publicly and adopted by the Secretary of War in a General Order (No. 10) issued from the War Department in 1874. I do not propose, however, to test here the opposite doctrine above referred to, but, in view of the fact that the same has been repeatedly pronounced against by the Attorney-General, and of the fact that, while the conflict of the Article remains thus in conflict, the due administrative law must be constantly embarrassed, and injustice and wrong be not infrequently wrought in individual cases, I desire simply to state that the grave existing complication and difficulty be fully and speedily removed by legislation such as that already initiated. In his answer of November 19, 1877, the present Secretary of War approved the recommendation and recommended its adoption by Congress. It is earnestly to be hoped that this recommendation may be repeated. At present, when parties are brought to trial for desertions committed many years ago, and sentenced, the President, upon the recommendation of the Judge-Advocate-General, in the majority of cases intervenes, through the Secretary of War, and, by the exercise of the pardoning power, sets the prisoner free. But this fact, which forcibly illustrates the injustice of such trials, shows also that the existing law or practice is faulty in permitting the same to be had at all.

I further to reiterate here my conviction that the adoption of the article of war making *gambling* a punishable offense in the Army, as it has been in the Navy, would subserve the best interests of the service. A bill, framed for the purpose, was agreed upon and passed by the Senate Committee on Military Affairs in April, 1878, but has not yet been acted upon. This bill is clear and comprehensive in its scope, and if passed and duly executed, would, it is believed, effectually remove the practice which, while it demoralizes the service wherever it exists, and gravely prejudices its good order and discipline, puts in the means of support of families, and is thus an unqualified

I would lastly ask the attention of the Secretary of War to two defective existing articles of war, which, though heretofore brought to



the consideration of Congress, remain as yet without correction. One of these is the employment in Article 72 of the word "general" before "officers," in prescribing by what officers the superior courts-martial may be convened. By the use of this word the article incapacitates any officer below the rank of general—a colonel, for example—who is in command of a military department, from ordering such a court. It is my opinion that *all* department commanders, of whatever rank, should be invested with the same authority in this particular, and accordingly that the word "general" in the first line of the article should be struck out by legislation. The provision, as it now stands, has in several instances caused very considerable embarrassment in the administration of military justice. The other defect had in view is in the framing of the present one hundred and fourth article, which in terms precludes the execution of a sentence of court-martial except where the "whole proceedings" of the same have been approved by the reviewing officer. This term has been construed in practice to mean the material proceedings, *i. e.*, the proceedings material to the legal validity of the sentence or punishment approved. The Article, however, as worded, is likely to mislead, and should properly be modified. A bill amending it was, indeed, reported by the Senate Military Committee in 1878, but no further action appears to have been taken.

Respectfully submitted.

W. M. DUNN,  
*Judge-Advocate-General.*

Hon. GEO. W. McCRARY,  
*Secretary of War.*

## REPORT OF THE QUARTERMASTER-GENERAL.

WAR DEPARTMENT,  
QUARTERMASTER-GENERAL'S OFFICE,  
October 10, 1879.

SIR: I have the honor to submit the annual report of operations of the Quartermaster's Department during the fiscal year ending 30th June, 1879.

The balance on the 1st of July, 1878, in the Treasury to the credit of the Quartermaster's Department was, as by last report.....	\$1,529,095 92	
The appropriations made for the service of the Quartermaster's Department during the fiscal year were, in gross.....	11,263,388 16	
Deficiencies for 1878 and prior years.....	16,352 76	
Amounts deposited to credit of appropriations and received from sales to officers of public property....	701,427 42	
<b>Total .....</b>		<b>\$13,510,264 26</b>
Remittances to disbursing officers have amounted to..	\$11,214,162 51	
Requisitions to pay settlements made by the Treasury.	858,967 70	
Amount drawn by Commissary-General of Subsistence.	12,135 50	
War transfer warrant under act 3d March, 1875.....	7,189 16	
Carried to surplus fund, act 30th June, 1874 .....	198,108 26	
<b>Total .....</b>	<b>12,290,563 13</b>	
Balance in Treasury undrawn at end of 30th June, 1879 .....	1,219,701 13	

A table accompanying this report gives the amount of the various items of appropriations, remittances, &c., in detail.

A table is also with this report giving the annual appropriations and annual expenditures for the Quartermaster's Department for each fiscal year since 1st of July 1871.

Referring to this table for details, I note here that the expenditures have been as follows:

In the year ending June 30, 1872 .....	\$12,722, 116 98
In the year ending June 30, 1873 .....	13,851, 215 04
In the year ending June 30, 1874 .....	14,558, 317 01
In the year ending June 30, 1875 .....	12,570, 392 92
In the year ending June 30, 1876 .....	12,546, 691 65
In the year ending June 30, 1877 .....	12,219, 599 40
In the year ending June 30, 1878 .....	10,746, 161 65
In the year ending June 30, 1879 (so far as ascertained) .....	10,768, 001 11

The Quartermaster's Department is charged with the duty of providing the means of transportation by land and water for all troops and all material of war. It furnishes the horses of the artillery and cavalry, and horses and mules for the trains. It provides and distributes clothing, tents, camp and garrison equipage, forage, lumber, and all material for camps and for shelter of troops and stores. It builds barracks, storehouses, hospitals; provides wagons and ambulances, and harness, except for cavalry and artillery horses; builds or chartered ships, steamers, and boats, docks and wharves; constructs and repairs roads, railways, and bridges; clears out obstructions in rivers and harbors, when necessary for military purposes; provides, by hire or purchase, grounds for military encampments and buildings; pays generally all expenses of military operations not by law assigned to some other department; and, finally, it provides and maintains military cemeteries in which the dead of the Army are buried.

Food, arms, ammunition, medical and hospital stores are purchased and issued by other departments, but the Quartermaster's Department transports them to the place of issue and provides storehouses for their preservation until consumed.

The corps of officers upon whom all these duties fall has been reduced until it is not able to fill well every post at which an officer of activity and ability is needed.

Many officers of the line finding themselves charged with heavy responsibility as acting assistant quartermasters, and having insufficient assistance at frontier posts, ask that the enlistment of post quartermaster sergeants may be allowed by law. Such non-commissioned officers, selected for experience and fidelity shown in actual service, would be very useful. They would remain at posts in charge of the property when the garrison changed, and thus would preserve knowledge and responsibility, now often lost through the frequent change of officers. Such officers also ask that some compensation may be granted them for the risk which they incur in the disbursement of public money and for the responsibility involved in the care of large amounts of public property.

I have the honor to renew the recommendation heretofore made, that an allowance of \$10 per month be made, in addition to his pay, to every line officer who is detailed by proper authority as acting assistant quartermaster of a military post, when such detail is properly reported to and approved by the War Department. Such an allowance is only just, and it would relieve the service from the feeling that heavy duties are imposed by such detail without any recognition or compensation.

Such duties are important and they should be sought by good officers, not imposed upon the slothful or unwilling.



## TRANSPORTATION.

The movement during the year was of 59,177 persons, 4,921 beasts, and 120,440 tons of material, the cost of which is, as reported, \$2,215,968.05.

The larger movements of troops were:

First Cavalry, Company D, from Department of California to Department of Columbia, 1,005 miles.

Fourth Artillery, Companies A and D, from Department of Columbia to Department of California, 788 miles.

Eighth Infantry, Companies A, B, C, D, E, G, I, and K, from Department of Arizona to Department of California, 1,234 miles.

Tenth Infantry, headquarters and ten companies from Department of Texas to Department of the East, 1,935 miles.

Twelfth Infantry, Companies B, C, D, E, F, G, H, I, and K, from Department of California to Department of Arizona, 1,268 miles.

Eighteenth Infantry, headquarters and ten companies from Department of South to Department of Dakota, 2,424 miles.

Twenty-second Infantry, headquarters and ten companies from Department of the East to the Department of Missouri and Texas, 1,629 miles.

## RAILROAD TRANSPORTATION.

Twenty-nine thousand seven hundred and ten persons, 3,758 beasts, and 57,866 tons of material were moved by railroad the cost of which service, excluding that over the bonded Pacific and land-grant railroads, was, as reported, \$601,436.53.

Under existing laws payments are not made out of appropriations of the Quartermaster's Department for military transportation over the bonded Pacific and land-grant railroads; the estimated value of that service for the fiscal year is: For transportation over the Pacific railroads, \$700,000; for transportation over the land-grant railroads, \$150,000; indicating that the aggregate value of all military transportation by rail during the year was \$1,451,436.53.

The railroad business of the Army is conducted according to the same rules, with the same general forms of requests, receipts, and accounts referred to in my report of last year. A general order (44 of 1879) was issued detailing the method of marking boxes, packages, &c., for shipment so that there shall be less difficulty hereafter in tracing any article lost *in transitu* and less danger of confusion in shipments.

The refusal of a number of land-grant railroads and their immediate connections to provide through tickets at through rates for the Quartermaster's Department because payments for military transportation over land-grant railroads are prohibited by law, notwithstanding that the principle has been established by the Supreme Court that they are entitled to some compensation for such service, has embarrassed the department and in some cases necessitated payments at high local rates for transportation which the citizen, not in military service, secures at lower through rates.

The difficulties have been partially overcome by correspondence with the railroads of the country, but cannot be finally settled until Congress authorizes some compensation to land-grant railroads for services performed for the department.

My views on the subject are fully set forth in Senate Ex. Doc. No. 28, Forty-fifth Congress, parts 1 and 2—copies herewith.

The sundry civil appropriation law of March 3, 1879, appropriated

\$300,000 to pay 50 per centum of land-grant railroad accounts theretofore wholly disallowed by the prohibitory laws of 1874 and 1875.

Two hundred and twenty-four of such accounts, amounting at full tariff rates to \$685,624.83, were filed in this office by the various land-grant railroads under the provisions of that law; 111, amounting to \$523,618.93, had been, on June 30, 1879, adjusted and referred to the Treasury for settlement. Similar accounts approximating \$120,000 had passed this office and were in the Treasury before the passage of the sundry civil law of March 3, 1879, and it is estimated that similar accounts amounting to \$100,000 are still in the hands of railroad companies, not presented after ascertainment that the appropriation made was not sufficient to pay them all.

This indicates that the outstanding accounts of land-grant railroads for military transportation on June 30, 1879, aggregated, at full tariff rates, about \$900,000, or, at 50 per centum of such rates, \$450,000.+

The sum of \$300,000, having been appropriated to pay 50 per cent. there is an apparent deficit of \$150,000, which sum should be appropriated in addition to the \$300,000 already appropriated to pay 50 per centum of all land-grant railroads accounts outstanding June 30, 1879. An appropriation of \$300,000 would be sufficient to settle nearly if not quite all such accounts on a basis of two-thirds of tariff rates, which, in my opinion, should be paid to these railroads for military transportation.

It is hoped that Congress will repeal the laws prohibiting payments to land-grant railroads, and fix a certain rate of compensation for the services they may render the government, authorizing payments from the regular Army transportation appropriation as made before the passage of the prohibitory laws.

The bonded Pacific railroads are still held subject to the provisions of section 5250 Revised Statutes, directing the withholdment by the Secretary of the Treasury of all payments on account of transportation over their respective roads.

The disposition of the money so withheld from the Union Pacific and Central Pacific Railroads for transportation after July 1, 1878, is controlled by the act of May 7, 1878. It is to be applied, one-half to the establishment of a sinking fund, and the other half to the liquidation of the interest paid by the United States upon the bonds issued in behalf of said roads.

Prior to the passage of the law of May 7, 1878, all the money withheld by the Secretary of the Treasury from those railroads had been applied to the liquidation of the interest.

The deficiency appropriation law of March 3, 1879 (Public No. 86), contains a provision authorizing the Secretary of the Treasury—

“ \* \* \* to make such entries upon the books of the department as will carry to the credit of said companies the amounts earned or to be earned by them during each fiscal year, and withheld under the provisions of section 5260 of the Revised Statutes, and of the act of Congress approved May 7, 1878; provided that this shall not authorize the expenditure of any money from the Treasury

This law has been construed as releasing the appropriations for Army transportation from any charges on account of transportation over the bonded Pacific railroads, and the amounts found due are no longer drawn from those appropriations as prior to the passage of this law.

It has also operated to close and settle adjusted accounts of these roads for services running from 1871 to 1879, amounting to \$1,583,052.98, which could not be settled before, because the Army transportation

appropriations, originally applicable, had been expended for other legitimate transportation bills.

Unsettled accounts of these roads, amounting to \$483,972.54, which have been presented by the railroads are now under adjustment, and in course of settlement under the same provisions of law.

The following statement indicates the total allowances for military transportation over these roads from the date they were first opened for traffic up to June 30, 1879:

Names of companies.	Amount paid in cash.	Amount credited on bonds under act of July 2, 1864.	Amount withheld under act of March 3, 1873, Rev. Stat. 5260, and act of May 7, 1878.	Total.
Union Pacific .....	\$1,690,034 44	\$1,690,034 62	\$3,230,201 57	\$6,610,270 63
Central Pacific .....	223,517 45	223,517 43	505,198 33	952,233 21
Kansas Pacific .....	880,941 07	880,341 08	525,684 34	2,386,966 49
Sioux City and Pacific .....	4,403 89	4,403 90	20,681 33	29,489 12
Total .....	2,798,296 85	2,798,297 03	4,281,785 57	9,878,380 45

The following statement exhibits the military transportation services of the Pacific railroads during the fiscal year ending June 30, 1879:

Names of companies.	Number of persons transported.	Number of animals transported.	Pounds of freight transported.
Union Pacific .....	6,556	1,088	44,370,129
Central Pacific .....	2,688	112	2,908,734
Kansas Pacific .....	1,081	558	4,487,419
Sioux City and Pacific .....	161	28	383,306
Total .....	10,486	1,786	52,147,582

The value of this service, at tariff rates, was (approximately, all the accounts not yet being rendered):

On the Union Pacific .....	\$463,943 40
On the Central Pacific .....	155,000 00
On the Kansas Pacific .....	3,000 00
Total .....	721,943 40

At the close of the fiscal year there remained in this office and at the Treasury unsettled accounts of the Pacific railroads to the amount of \$325,364.13 in this office, and \$158,608.41 in the Treasury; a total of \$483,972.54.

The total value of the military transportation over these roads to 30th June, 1879, is \$10,362,331.99.

#### WAGON AND STAGE TRANSPORTATION.

There were 31 contracts for wagon transportation during the year; 32,539 tons of supplies were moved by wagon teams at a cost of \$858,142.56, and 3,283 passengers by stage at a cost of \$76,747.12.

#### WATER TRANSPORTATION.

During the year 26,182 passengers, 1,163 beasts, and 60,022,000 pounds of stores were carried by vessel, the cost of which service was, as reported, \$679,641.84.



The following-named vessels, owned by the Quartermaster's Department, have been in service during the year, viz:

Steamer Henry Smith in New York Harbor; propeller Ordnance, in New York Harbor, to keep up communication with the ordnance-proving grounds at Sandy Hook; steam-tug Atlantic, in New York Harbor, to keep up communication with Headquarters Division of the Atlantic, on Governor's Island; screw-propeller General McPherson, in San Francisco Harbor; steam-launches General Jesup, at Fort Adams, Rhode Island; Thayer, in Boston Harbor; Monroe, at Fortress Monroe; General Greene, at Fort McHenry, Baltimore; Hamilton, at David's Island, New York Harbor; Barrancas, at Fort Barrancas, Fla.; light-draught river steamer General Sherman, on the Upper Missouri and the Yellowstone and Big Horn Rivers.

The sailing schooner Matchless was employed at Key West, Fla.

One steam-tug, the Atlantic, was purchased during the year at a total cost of \$13,865.56, for service in keeping up communication between Headquarters Department of the East and Military Division of the Atlantic, on Governor's Island, New York Harbor, and the city.

These vessels, except the General Sherman, are employed as tenders for military posts; they keep up communication, enable the officers to board passing vessels when necessary, and explore the waters within the radius of their influence.

The Sherman is employed in carrying troops and supplies to and from the upper posts on the Missouri and its tributaries.

The great portion of the transportation service of the Quartermaster's Department on the ocean, lakes, and rivers is performed by the established commercial lines, and on the Upper Missouri under advertisement and contract.

The Upper Missouri service is costly and forms a considerable portion of the expenditure for transportation of the Army, but it is well and promptly performed.

The cost of running and maintaining the vessels owned by the department itself during the year was \$104,305.28.

There was paid for vessels hired and chartered during the same time \$32,462.81, exclusive of the cost of freight and passengers carried on the vessels of contractors for transportation.

#### INDEBTED RAILROADS.

On the 1st of July, 1878, there remained due to the United States by certain railroads for material sold them on credit at the end of the war, under executive orders of 8th August and 14th October, 1865, \$1,892,677.11.

One of the companies, the Nashville and Northwestern, is insolvent; its indebtedness, amounting to \$908,550.27, has therefore been transferred to the list of companies whose debts are not collectible.

During the fiscal year 1878-'79 accrued interest and charges on these debts amounted to \$42,591.49. Payments in military transportation amounted to \$243.57. And the sum remaining due and charged to the indebted railroads with which no compromise or settlement has been effected under the various acts passed for their relief, and whose names and debts have not been stricken from the list of indebted railroad companies on account of their insolvency, was on July 1, 1879, \$1,026,474.76.

Accounts in favor of the Mobile and Ohio Railroad amounting to \$28,891.88 have been settled under the act of March 3, 1879, appropriating \$300,000 to pay for transportation over certain land-grant

railroads, and 50 per centum of the amount, \$14,445.94, allowed by the accounting officers of the Treasury Department. This amount has not been credited on the indebtedness of the company, as no award for it has been received at this office. Other accounts of the company remain unsettled for want of an appropriation to pay them.

In postal earnings there are due—

The McMinnville and Manchester Railroad.....	\$5,054 37
The Nashville and Northwestern Railroad.....	55,581 92
Total.....	60,636 29

These sums are due for services in conveying the mails prior to July 1, 1876, and are payable to the Quartermaster's Department, to be credited when paid upon the debts incurred by those two roads.

The amount due the Nashville and Northwestern Railroad has been regularly assigned by the company to the Quartermaster's Department, and only awaits an appropriation for its payment. I recommend that special effort be made at the next session of Congress to secure the necessary appropriation to pay the amount, or the passage of a law which will authorize the Postmaster-General to adjust and settle the account of the railroad for services in carrying the mails prior to July 1, 1876, and to draw his warrant on the Treasurer of the United States for whatever sum he may find to be due for the service, as was done in the act of March 3, 1879, authorizing the Secretary of War to reopen and adjust the settlement made with the Western and Atlantic Railroad of Georgia for property purchased by that road.

The amount due the United States payable from the unpaid postal earnings of the McMinnville and Manchester Railroad (\$5,054.37) cannot be paid and credited on the indebtedness of that road, for want of an appropriation by Congress. I recommend that the necessary appropriation be asked for.

Efforts have been made for a number of years by most if not all the railroad companies that purchased property of the United States at the close of the war, and that have paid in full the debts incurred for it, to secure the passage of a law directing the Secretary of War to reopen and readjust the settlements that have been made with those companies on the basis of settlements made with certain Tennessee railroads, against which suits have been brought under the act of March 3, 1871, and to refund a portion of the money received by the United States from the companies in payment of their debt.

The amount which would be taken out of the Treasury and paid to the railroad companies, if the efforts of the companies should succeed, is estimated to be about \$1,043,000, or 33½ per cent. of the whole amount received from those companies, and it might exceed \$1,148,000.

I have already stated my views fully in relation to the propriety of granting the relief, so called, asked for by the companies, in my communications to the Secretary of War of April 26, 1876, and January 24, 1879, which will be found in Senate Ex. Doc. No. 57, Forty-fourth Congress, first session, and the Congressional Record for February 9, 1879, and I need here only invite attention to them.

A tabular statement accompanies this report in which will be found full details of all collections, settlements, compromises, and claims on account of the debts of the indebted railroads, and of the balance still due and unsettled.

#### CAVALRY AND ARTILLERY HORSES.

During the fiscal year 1,686 horses were purchased for the cavalry and artillery service; they cost \$156,164.98.



es varied as follows: In the Northern and Eastern States it \$99.49+; in Department of the South, \$175; in Department of the Missouri, \$97.58+; in Department of the Platte, \$103.52; in Department of California, \$127.88; in Department of the Columbia, \$90.49+; in Department of Arizona, \$75; in Department of the New York depot, \$125; and at Saint Louis depot, \$83.55. The average for the United States, \$92.62+.

For the average price was \$117.23, a difference of nearly 20 per

thousand four hundred and eighty-nine mules were purchased for \$3.23. Average cost in Department of the Missouri, \$107.25+; in Department of the Platte, \$102.80+; Department of California, \$171.27+; in Department of the Columbia, \$139.16+; Department of Arizona, \$131.25; Washington depot, \$170; and New York depot, \$99.95. Average of all purchased, \$105.41+.

For the average price of mules was \$130.15, also a reduction of 10 per cent.

For nine draught horses were also purchased, costing \$12,486, or \$1,385 each.

For one hundred and twenty-five horses worn out were sold during the year for \$57,646, and 535 mules for \$17,464.55, and 5 oxen for \$83.

Expense of remounts for cavalry and artillery.....	\$156,164 98
For light horses.....	12,486 00
.....	156,963 23

.....	325,614 21
Proceeds of sales of worn-out animals.....	75,193 55

Cost to the United States of cavalry and artillery horses and animals has been.....	250,420 66
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Under the law the sums realized from sales of worn-out animals are applicable to purchase of animals to replace them, but have been credited into the Treasury to credit of miscellaneous receipts.

The following statement shows the number of animals in service July

	Horses.	Mules.	Oxen.
July 1, 1878.....	11,375	9,688	59
At the year.....	1,765	1,489	2
.....	538	147	1
.....	13,678	11,324	62
.....	1,725	535	5
.....	586	482	14
.....	377	276	.....
.....	2,688	1,293	19
June 30, 1879.....	10,990	10,031	43

of a range of about 100 horses and mules to 120 soldiers. These are the troops. In addition a large number of mules and oxen belonging to contractors are constantly employed in hauling supplies and baggage between military posts in the interior of the continent.

#### FUEL, FORAGE, AND STRAW.

There has been made in the method of supplying fuel to all officers and men, and the issue of forage to officers east of the Mississippi

River has been discontinued under the law, which feeds and supports the horse of an officer west of that river, but requires the officer east of it, drawing the same pay, if mounted, to purchase forage out of his pay, or his private income, should he be so fortunate as to have any.

Officers submit loyally to the law, but it is difficult for them to persuade themselves that in making this distinction between the two sides of a geographical line they have been treated with that equal liberality and justice which has always heretofore characterized the military legislation of the country.

There was issued to the Army during the year, 628,268 bushels of corn; 952,473 bushels of oats; 180,529 bushels barley; 51,934 bushels of bran; 53,078 tons of hay; 140 tons of fodder, and 2,462 tons of straw.

The issues of fuel were 42,096 cords of hard wood; 71,582 cords of soft wood; 19,391 tons of anthracite coal, and 16,279 tons of bituminous coal.

General Orders No. 113, Headquarters of the Army, 14th December, 1877, published a new scale of equivalents to govern the issue of fuel. Further official experiments on the values of the different fuels of the United States, especially of coals, are desirable, and it is to be hoped that Congress may grant an appropriation for this investigation.

The law which abolished issue of fuel to officers causes great hardship to those who are stationed at military posts in inclement climates, and where fuel is scarce and costly.

It is much to be desired that this allowance be restored. It is even more unjust to those in the wilderness than the abolition of the forage ration is to those living east of the Mississippi.

#### CONTRACTS.

Eight hundred and seventy-eight contracts were received at this office for supplies, materials, and for work in the various branches of the military service connected with the Quartermaster's Department.

#### MILITARY CARRIAGES AND HARNESS.

There were purchased during the year, 281 six-mule, 215 two horse and four horse or mule wagons, 72 spring wagons, 50 ambulance wagons, and 6 miscellaneous wagons, trucks, and drays.

Of these there were purchased under contract, after advertisement, 200 six-mule wagons from Studebaker Brothers, of South Bend, Ind., at \$89.90 each; 25 six-mule wagons from Henry M. Black, of San Francisco, Cal., at \$200 each; 100 two horse and four horse or mule wagons from Wilson, Childs & Co. of Philadelphia, Pa., at \$83 each; 100 two horse and four horse or mule wagons from the Kansas Manufacturing Company of Leavenworth, Kans., at \$84 each; 15 two horse and four horse or mule wagons from Henry M. Black, of San Francisco, Cal., at \$200 each; 40 spring wagons, Dougherty pattern, from Wilson, Childs & Co., of Philadelphia, Pa., at \$165 each; 25 spring wagons, Dougherty pattern, from the Kansas Manufacturing Company of Leavenworth, Kans., at \$149.50 each, and 50 ambulance wagons, Army pattern, from the Kansas Manufacturing Company of Leavenworth, Kans., at \$174.50 each.

Forty-one spring wagons have been furnished to posts and depots during the year.

One hundred and seventy-five sets of six-mule wagons, and 100 sets of four-mule ambulance harness, were purchased under contracts at



**\$57.10 per set for six-mule wagons and \$52 per set for four-mule ambulance harness.**

#### TARGETS FOR RIFLE PRACTICE.

**Fifteen targets of cast iron have been issued to the Army during the year. On the 16th of August, 1879, under General Orders No. 86, Headquarters of the Army, the duty of providing targets for rifle practice was transferred to the Ordnance Department, and this department ceased to purchase and issue them.**

#### EXPLORING EXPEDITIONS.

**Under General Orders No. 62, Headquarters of the Army, 3d July, 1877, this department has continued to give materials and transportation and other aid to the surveying expeditions under Lieut. George M. Wheeler, of the Corps of Engineers.**

#### CLAIMS UNDER ACT OF JULY 4, 1864.

**In the report herewith of Maj. J. M. Moore, who, since the 7th November, 1878, when he relieved Maj. R. N. Batchelder, until that time in charge of the claims branch of this office, will be found full details as to the number and cost of agents and clerks engaged in the work of investigating and preparing for settlement the claims for quartermaster's stores taken by the Army and delivered to and used by the Army during the late war in States not in rebellion.**

**The act of July 4, 1864, made it the duty of the Quartermaster-General to receive and to investigate all such claims, and if convinced of their justice, of the loyalty of the claimant, and that the stores have been actually received or taken for the use of and used by the Army, then to report each case to the Third Auditor, with recommendation for settlement.**

**The total cost of these examinations during the past year is estimated at \$122,825.52.**

**The number of claims reported on by agents during the year is 2,460, calling for \$1,915,614.84. The amount recommended for allowance by agents is \$220,534.22.**

**There were on file on 1st July, 1878, 11,676 claims, and during the year 1,640 new claims were filed, making a total of 13,316, calling for \$6,921,592.50. Of these 635 were favorably acted on by the Quartermaster-General during the year, and 1,032 were rejected.**

**These 1,667 claims decided by this office called for \$1,398,298.55. The amount reported to the Treasury recommended for allowance was \$121,568.26.**

**At the close of the fiscal year 1,446 claims were on file prepared for the final action of the Quartermaster-General, but had not been acted on by him for want of time and opportunity. Many of these have since been disposed of.**

**The total amount of the 3,796 claims which have been disposed of, or which have received preparatory consideration during the year, is \$3,186,658.55; average amount of each claim, \$840.00. The average cost of investigating and preparing these for action of the Quartermaster-General was \$32.00 each. This includes the cost of receiving, recording, and answering a multitude of inquiries from claimants, their friends, and their attorneys or agents.**

The last annual report of this office contains a detailed table in regard to these claims which I do not repeat here.

The general summary of the work may be shortly stated as follows:

There have been filed under the act of July 4, 1864, 40,748 claims, for \$30,557,014.99; 9,905 have been reported by the Quartermaster-General with recommendation for allowance, amounting to \$4,143,932.95; the face of these claims was reduced by the sum of \$3,566,792.44; 19,194 claims, calling for \$17,322,995.60, have been rejected as not proved or not meritorious.

#### MISCELLANEOUS CLAIMS AND ACCOUNTS.

On July 1, 1878, there were on file in this office 12,450 claims, amounting to .....	\$6,895,072 79
And 328 accounts, amounting to .....	51,127 53

Making in the aggregate 12,778 claims and accounts, amounting to...	6,947,001 32
During the year 2,031 were received, amounting to .....	273,472 93

Total claims and accounts .....	7,220,474 25
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During the year, 115 claims were examined and approved for \$9,577.04, being \$1,170.70 less than claimed.

One hundred and eighty-one claims were referred to the Third Auditor of the Treasury for action of the accounting officers, amounting to \$25,063.64.

One hundred and sixty-two claims, amounting to \$124,224.08, were referred to other departments to which they properly pertained.

One hundred and twenty, amounting to \$25,264.82, were rejected.

Eight hundred and sixty-three accounts, amounting to \$39,303.88, were approved, being a deduction in the amount as presented of \$1,050.65.

Four hundred and forty-five were referred to other departments, amounting to \$30,965.48.

Nineteen accounts, amounting to \$682.59, were rejected, making a total of 1,905 claims, and accounts, calling for \$257,301.88 disposed of during the year.

There are still on file, unsettled, 12,513 miscellaneous claims and 391 accounts, amounting, as presented, to \$6,963,172.37.

\* \* \* \* \*

#### BARRACKS AND QUARTERS.

During the fiscal year the construction of 104 new buildings was authorized, at a total estimated cost of \$227,463. They comprise barracks, officers' quarters, public storehouses, guard-houses, magazines, &c., and are at military posts in California, Kansas, Missouri, Nebraska, Minnesota, Texas, Rhode Island, New York, Connecticut, Virginia, Maryland, Pennsylvania, North Carolina, South Carolina, Florida, Arkansas, and Kentucky, and in the Territories of Arizona, Idaho, Washington, Indian, Wyoming, Dakota, Montana, New Mexico, and District of Columbia.

Repairs of wharves were authorized to the amount of \$18,393.

The expenditures for construction and repairs of buildings have been distributed as follows:

Department of Arizona .....	\$23,715 00
Department of California .....	61,820 00
Department of Columbia .....	54,151 00

Total Division of the Pacific .....	\$139,686 00
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Department of the Missouri.....	\$71,066 00	
Department of the Platte.....	15,646 00	
Department of Dakota.....	36,102 00	
Department of Texas.....	64,422 00	
Total Division of the Missouri.....		\$186,236 00
Department of the South.....	37,758 00	
Department of the East.....	153,712 00	
Total Division of the Atlantic.....		191,470 00
Grand total.....		517,392 00

In addition to these expenditures, the following new posts, &c., have been authorized:

In January and March, 1879, \$4,600 were authorized for sheltering troops on the North Fork of the Canadian River, in the Indian Territory.

In June, 1879, the commanding general Division of the Pacific was authorized to use any spare barracks and quarters money in his division that he might have, to commence a new four-company post at or near Lake Chelan, Northern Washington Territory; \$20,000 have since been allotted towards building it.

#### SPECIAL BUILDING PROJECTS AUTHORIZED BY CONGRESS.

In Army bill approved June 18, 1878, \$100,000 was appropriated for building a military post near the northern boundary of the Territory of Montana, in the vicinity of the point where the Milk River crosses said boundary from the Dominion of Canada. This is to be a six-company post, and known as Fort Assinaboine.

In same bill Congress appropriated \$100,000 for building a military post near the Black Hills, in either of the Territories of Wyoming or Dakota.

This post has been located on Bear Butte Creek, Dakota. It is to be a ten-company post, and to be known as Fort Meade.

In same bill Congress appropriated \$60,000 for storehouses and offices at Omaha, Nebraska.

In Army bill approved June 23, 1879, \$30,000 was appropriated for construction of storehouse and depot building, provided site is donated to the United States, at Omaha.

In sundry civil bill, approved June 20, 1878, \$13,500 was appropriated for building operations at Fort Leavenworth military prison.

In same bill Congress appropriated "for repair and erection of barracks at Fort Monroe, Va., \$25,000."

In similar bill for present year, an additional appropriation of \$34,000 is made to complete that work.

In sundry civil bill of March 3, 1879, \$40,000 is appropriated for the establishment of a new post in the vicinity of Pagosa Springs, Colorado. This is to be a four-company post, and known as Fort Lewis.

By act approved February 4, 1879, \$40,000 was appropriated for purchase of ground and establishment of a military post at El Paso, Tex. This post is to be known as New Fort Bliss.

In sundry civil bill approved March 3, 1879, \$25,000 was appropriated for rebuilding eight sets of officers' quarters at Madison Barracks, N. Y.

In same bill Congress appropriated \$100,000 for requisite department headquarters buildings at Fort Snelling, Minn.

In Army bill approved June 23, 1879, Congress appropriated \$50,000 for the construction of a military post near the Niobrara River, in Northern Nebraska.

## HOSPITALS.

Construction, repairs, and alterations of military hospitals to the amount of \$74,987 were authorized during the year.

## SALES OF BUILDINGS.

Four buildings and the remnants of two wharves were ordered to be sold during the year.

## PURCHASE OF MILITARY SITES IN TEXAS.

None of the sites of military posts in Texas, for purchase of which the War Department has for years asked Congress to make provision, have been acquired under the conditions of the act of 3d March, 1875.

That act so limited the powers and the appropriation it granted that the War Department has been unable to procure consent of any of the owners of the land in question.

In the mean time they increase their demand for rent upon the expiration of each lease, which, under the laws governing contracts, can be made only for one year at a time.

For particulars on this subject I beg to refer to my last annual report.

No progress has been made, and I apprehend that none will be made until Congress sees fit to trust the War Department with some discretion in the matter of their purchase.

When Congress appropriated \$10,000 to purchase the site of Fort Duncan, the owner demanded \$10,358. The law forbidding the payment of more than 10,000, he leased the land to the United States at a rent of \$2,400 a year and advanced his selling price to \$20,000. Subsequently he increased this price to \$30,000, and refuses to name a price at which he will now sell.

## LOSSES BY FIRE.

Twelve fires were reported during the year.

On July 9, 1878, carpenter's shop, &c., destroyed at Fort McPherson, Nebr.

On July 13, 1878, carpenters' shop, &c., destroyed at Fort A. Lincoln, Dak.

On October 27, 1878, three sets officers' quarters destroyed at Fort Whipple, Arizona Territory.

On October 29, 1878, ice-house destroyed at Fort Dodge, Kans.

On November 3, 1878, stables destroyed at Fort Leavenworth, Kans.

On November 6, 1878, two sets of officers' quarters destroyed at Fort Missoula, Montana Territory.

On December 8, 1878, post traders' store, &c., destroyed at Fort McHenry, Md.

On December 14, 1878, one set officers' quarters destroyed at Camp Independence, Cal.

On December 24, 1878, two sets officers' quarters destroyed at Fort Keogh, Mont.

On December 31, 1878, one set officers' quarters destroyed at Fort McHenry, Md.

On January 4, 1879, headquarters offices partially destroyed at Chicago, Ill.

On March 6, 1879, Battery B quarters partially destroyed at Fort McHenry, Md.

## SAN ANTONIO DEPOT.

The extension of the second story of the south front of this building, to provide additional office-rooms for the headquarters of the Department of Texas, has been completed, at a cost of \$19,952.

The rooms will be useful, although Congress in effect has now repealed the law compelling headquarters of military departments and divisions to move away from the popular centers of business and intelligence and go to military posts, at no one of which, when the attempt to execute the order was made, were found in existence sufficient quarters for the accommodation of the business and the *personnel* of headquarters.

The expenditure in building thus far incurred or authorized, and to be incurred, on account of the removal of such headquarters, may be estimated as follows:

Alterations in old buildings and erection of new buildings at Governor's Island, New York Harbor.....	\$55,000
Estimated cost of buildings already erected or buildings needed, and for which estimates have been sent in for the new recruiting depot on David's Island, caused by the occupation of the former recruiting depot on Governor's Island as the headquarters Division of the Atlantic and Department of the East .....	184,000
Same at Fort Snelling, Minn.....	299,000
Same at Omaha, Nebr.....	148,000
Same at San Antonio, Tex.....	116,000
Same at Presidio, San Francisco, Cal.....	54,000
	<hr/> \$56,000

## MILITARY RESERVATIONS DECLARED.

Four military reservations have been declared, viz: December 18, 1878, Fort Meade, Dakota Territory; January 28, 1879, Fort Lewis, Colo.; April 28, 1879, Camp Sheridan, Nebr.; June 10, 1879, Fort Missoula, Montana Territory.

## CLOTHING, CAMP AND GARRISON EQUIPAGE.

The expenditure on account of clothing and equipage of the Army during the fiscal year was .....	\$862,620 71
The balance in the Treasury undrawn 30th June, 1879, was.....	127,676 67
Total .....	<hr/> 990,297 38
Of this sum the annual appropriation for the fiscal year was .....	900,000 00
Credits from sales to officers and of issues to soldiers in excess of the allowance .....	90 297 38

The greater part of the \$127,676.67 remaining in the Treasury on the 30th June will be consumed by fulfillment of contracts existing and not completed at expiration of fiscal year.

The depot at San Francisco was, by General Order No. 75, A. G. O., 1878, created a general depot of the Quartermaster's Department, but authority over it, so far as relates to the Division of the Pacific, was in the order reserved to the major general commanding on the Pacific Coast. It has been fully organized under the command of Maj. R. N. Batchelder, an officer of ability and of experience with troops both in war and peace. The working of the depot is satisfactory.

The manufacturers on the Pacific coast, to whom certain advantages are secured by act of Congress, are better content to deal with officers directly representing the War Department and stationed among them.

I fear that the improvement in the quality of the clothing of the Army has been carried almost too far in regard to woollen cloths or kerseys.

Officers and soldiers have been educated to demand perfect uniformity in color of their clothing and to complain of the least departure from the shade of the standard material.

Of late heavy losses have been caused to contractors, occasioned by the rejection for color of light blue kerseys, such as the trousers of the troops are made of.

There can be no question of the desire and intention of manufacturers who have bound themselves by contract and invested large capital in the purchase of the material to comply with their contracts, but there is some practical difficulty not yet overcome in securing a uniform shade of light blue with an indigo dye. Materials perfectly satisfactory, except in color, and which were of good color, have, to the great regret of this department and to the great loss of manufacturers, been rejected because the color, though good, differed so much from that of the standard that, if worn in ranks on parade or on review, it would not be uniform.

Formerly, neither officers, soldiers, nor this department insisted upon such exact uniformity; but, as stated above, the eyes of officers and soldiers have been educated till they will not tolerate any difference distinguishable in ranks on parade.

Under the law of March 3, 1879, which requires the Secretary of War to have such supplies for the Army as can be economically made at the military prison at Fort Leavenworth manufactured at that establishment, all the boots and shoes for the Army are made there; chairs for use in barracks are made at the same place, and preparations have been ordered for beginning the manufacture of military harness.

Whether it will be economical to abandon the contract system in the supply of wagons and ambulances for the Army in favor of convict labor at the military prison is at this time the subject of study.

The military prison has furnished during the year 40,000 tent pins, 7,777 barrack chairs, and 51,756 pairs shoes.

The materials for these shoes cost \$1.69½ per pair; prisoners' labor 7½ cents per pair, making the total cost \$1.77¼ per pair. The chairs cost 95½ cents each.

#### NATIONAL MILITARY CEMETERIES.

The number of recognized national military cemeteries is now eighty. The Custer battle-field, on the Little Big Horn, in Montana, was announced as a national cemetery by War Department General Orders 78, August 1, 1879.

A granite block, on which have been inscribed the names of all who fell on that field contending against a savage enemy, has been prepared and is now on its way, via the great lakes and the Northern Pacific Railroad and the Missouri River, to its destination. The stone is simple in form, but it is massive and heavy enough to remain for ages where placed—a landmark of the conflict between civilization and barbarism.

Ten superintendents have been appointed during the year, all honorably discharged disabled soldiers, who have first passed the required examination. Three superintendents have died, three have resigned, and one has been discharged during the year.

Henry Fowler, superintendent of the Chalmette Cemetery, New Orleans, La., died of yellow fever. Civil Engineer S. M. Robbins fell by the same pestilence while on duty at Baton Rouge, La. This year, the superintendents were notified early that if they were threatened by an outbreak of yellow fever, permission to change their location during the prevalence of the disease would be granted. Only one has found



to avail himself of this permission; the superintendent of the cemetery.

Number of interments in all the national military cemeteries is which 170,960 are known and 147,495 are unknown.

Soldiers' graves in national military cemeteries have now been with durable headstones of marble, generally; a few, however, of granite.

The act of 3d of February, 1879, contracts for marking with headstones the graves of Union soldiers of the late war who were buried in village or private cemeteries have been awarded to the lowest bidders who complied with the conditions of the advertisement giving sufficient security.

Whitney is the contractor for the greater portion of the work, at from \$1.99 to \$2.38 each grave, according to distance from the place of difficulty of access. For the remainder of the work S. G. Smith is the successful bidder, at \$2.25 for graves in the State of Maryland and \$2.60 for all others not awarded to Whitney. It is estimated that the average cost of the headstones will be \$2.28 each, set up in place.

The inquiries have been made by letters, circulars, and through the columns of the public press, as to the location of graves needing such attention, and entitled thereto under the law. Thousands of replies have been received and are still reaching this office. It is not probable that all the headstones can be erected under these contracts before the close of the next season.

The cemeteries are reported in good order.

With the consent and approval of the Secretary of War, the six columns which formed the front portico of the War Department, demolished during the summer of this season to make room for the magnificent building now being erected on its site, were removed to the Arlington Cemetery, where they have been used in decorating two of the principal gateways of this beautiful and beautiful cemetery.

The main gate has four of the columns, with entablature. The north-west gate has two of the columns with no entablature; these two will be used for funeral vases.

We have preserved these historic columns, among which have moved the remains of soldiers of the Army and the chiefs of the War Department for the last sixty years, and they have furnished very handsome monuments to the principal cemetery.

The 208 acres in this cemetery, and a very large space is and is now an unoccupied by military interments. I suggest, therefore, that the attention of Congress be invited to the propriety of making this a National Public Cemetery, and authorizing the interment therein of the remains of any officer, Senator or Member of Congress dying in office in this country or elsewhere, whose friends may desire such a place of burial for the remains of a present Congressional Cemetery is, I understand, a private burial ground, in which the government owns some lots. The city is now encroaching upon it, and the practice of modern civilization is to forbid the burial of the dead within the limits of a city and near the habitation of the living.

The road from Georgetown to the Arlington Cemetery is badly conditioned and it is very desirable that it be improved, for which purpose, a road between Vicksburg and the national cemetery near that place. All appropriation is needed. An expenditure of \$10,000 would greatly facilitate the progress of many pilgrims to the graves of our

their relatives, and the visits of many citizens who wish to see this home of the dead of the last great civil contest.

The appropriation granted for the road to the Vicksburg Cemetery was \$7,000. The original estimate and request was for \$13,000. The road has been partly constructed, and it is hoped that Congress will see fit to grant the remainder of the sum necessary to complete it, viz, \$6,000.

Under the provisions of the sundry civil bill, approved June 20th, 1878, making appropriation of \$1,500 for protection and care of the war prisoners' cemetery on Johnson's Island, Lake Erie, near Sandusky, efforts have been made to procure a conveyance of the land to the United States. The owner has refused to part with the title, which the law made a condition preliminary to any expenditure for improvement, unless under the following conditions: that if at any time the government should cease to keep the lot in good condition, or cease to use it for cemetery purposes alone, it should revert to the present owner, and that some one, to be designated by the said owner, his heirs or assigns, should be appointed to have charge of it at all times.

The expenditures upon the care and improvement and completion of the cemeteries, other than for marble headstones, during the year, have amounted to \$140,140.47. The expenditures for headstones, under the contracts, have been \$480.

The cemeteries are reported in good order, and gradually, under careful cultivation, improving in beauty.

The reports of officers on duty in this office, with many statements and tables, are hereto appended. They give full and clear accounts of all operations of this department during the fiscal year, of sufficient importance to be placed on record in a communication to Congress.

To their zealous and cheerful and intelligent aid is due the success with which the Quartermaster-General's Office has met the innumerable demands upon the resources of the department.

They are Bvt. Maj. Gen. S. Van Vliet, colonel and assistant quartermaster-general; Bvt. Brig. Gen. J. D. Bingham, lieutenant-colonel and deputy quartermaster-general; Lieut. Col. H. C. Hodges, deputy quartermaster-general; Bvt. Lieut. Col. J. M. Moore, major and quartermaster; and Bvt. Lieut. Col. A. F. Rockwell, captain and assistant quartermaster, who has had charge of all the business of the office relating to the national cemeteries.

Respectfully submitted.

M. C. MEIGS,

*Quartermaster-General, Brevet Major-General, U. S. A.*

Hon. GEORGE W. McCURRY,  
*Secretary of War.*

## REPORT OF COMMISSARY-GENERAL OF SUBSISTENCE.

WAR DEPARTMENT,  
OFFICE COMMISSARY-GENERAL OF SUBSISTENCE,  
*Washington, D. C., October 9, 1879.*

SIR: In compliance with the instructions contained in circular from the Adjutant-General of the Army, dated September 6, 1879, I have the honor to submit the following report of the operations of the Subsistence Department for the fiscal year ending June 30, 1879, with such remarks and recommendations in connection therewith as are thought to be for the best interests of the government and the Army.

## RESOURCES AND EXPENDITURES.

ing statement exhibits the aggregate fiscal resources and of the department for the year mentioned, and the balances expended at the close of the fiscal year:

## RESOURCES.

the Treasury to the credit of appropriations of the Department on June 30, 1878, as follows:

of the Army, 1877.....	\$4,126 11
for quartermaster stores and commissary supplies July 4, 1864," per act March 11, 1878, being	
for "commissary" supplies.....	67 55
for quartermaster stores and commissary supplies July 4, 1864," per act April 30, 1878, being	
for "commissary" supplies.....	10 50

\$4,204 16

credit of officers of the Subsistence Department, and of duty in the Subsistence Department with the Treasurer, surors, and designated depositaries, and in their personal same date, as follows:

of the Army, 1878.....	161,561 02
ded to the credit of the Treasurer United States and in er into the appropriation on June 30, 1878, since covered	
of the Army, 1878.....	111 84

ppropriated for the Subsistence Department year ending June 30, 1879, as follows:

of the Army, 1879, act April 30, 1878....	\$300,000 00
of the Army, 1879, act June 18, 1878....	2,015,000 00
on of rations to prisoners of war in rebel act June 14, 1878.....	1,348 75
"quartermaster's stores and commissary act July 4, 1864," per act March 3, 1879,	
portion for "commissary" supplies.....	10,152 28
ous claims audited by Third Auditor under etion act June 14, 1878, per act March 3,	
ng portion for "commissary" supplies, &c.	7,545 25

2,334,046 28

ded by the Secretary of War to the Subsistence Department subsistence of prisoners at military prison, Fort Leavenworth, for the fiscal year 1879:

the military prison, Fort Leavenworth, Kansas, 1879...	22,037 00
ferred to the Subsistence Department by the Quartermaster for above purposes:	

the military prison, Fort Leavenworth, Kansas, 1879...	2,036 43
--	----------

ded to the appropriations of the Subsistence Department of the Treasury during the fiscal year 1879, as follows:

appropriation, Subsistence of the 1876:	
ment of stoppage of pay of officers..	\$6 97
ment of loss of subsistence stores in ortation .....	45 81
	\$52 78

appropriation, Subsistence of the 1877:

ment of stoppage of pay of officers..	77 64
ment of loss of subsistence stores in ortation .....	77 62
	155 26

appropriation, Subsistence of the 1878:

count of tobacco sold to enlisted during the fiscal year 1878.....	23,216 13
count of subsistence stores sold to ers and enlisted men on credit ng the fiscal year 1878.....	207 61
count of subsistence stores lost by mmissary-sergeant during the fiscal year 1878.....	210 66

## Resources—Continued.

By the Quartermaster's Department:	
On account of purchase of beef cattle by that department during the fiscal year 1878 .....	\$183 12
On account of subsistence stores lost in transportation during the fiscal year 1878 .....	426 00
By the Interior Department:	
On account of subsistence stores furnished Indians during the fiscal year 1878 .....	826 11
Deposits by officers of the Army:	
On account of sales at auction, &c., during the fiscal year 1878 .....	48 38
On accounts of sales to civilian employes during the fiscal year 1878 .....	49 92
On account of errors in accounts pertaining to fiscal year 1878 .....	22 88
Of unexpended balances pertaining to fiscal year 1878 .....	3,481 91
Transfers, &c., on settlement of officers' accounts pertaining to the fiscal year 1878 .....	69 19
	<hr/> \$28,741 91
To the appropriation, Subsistence of the Army, 1879:	
By the Pay Department:	
On account of tobacco sold to enlisted men during the fiscal year 1879 .....	98,872 69
On account of subsistence stores sold to Indian scouts, &c., during the fiscal year 1879 .....	427 44
On account of subsistence stores sold to officers and enlisted men on credit during the fiscal year 1879 .....	47 99
By the Quartermaster's Department:	
On account of subsistence stores lost in transportation during the fiscal year 1879 .....	235 90
By the Interior Department:	
On account of subsistence stores furnished Indians during the fiscal year 1879 .....	664 23
By deposits by officers of the Army:	
On account of sales to officers and to civilian employes during the fiscal year 1879 .....	275 65
On account of sales of condemned stores at auction, &c., during the fiscal year 1879 .....	155 92
In settlement of accounts during the fiscal year 1879 .....	233 25
	<hr/> 100,913 16

\$129,863 11

Amounts received by officers of the Subsistence Department and by officers doing duty in the Subsistence Department, from sales of subsistence stores, to the following purchasers during the fiscal year 1879, and taken up for immediate disbursement under the appropriation, Subsistence of the Army, 1879:

Sales to officers of the Army, \$425,687.64; to enlisted men, \$326,008.41; to civilian employes, \$9,080.94; to naval officers, \$2,044.69; to civilian engineers, \$132.86; to the Engineer Corps, \$523.63; to Indian agents, \$1,017.67; to employes of Indian agents, \$213.73; to Soldiers' Home, \$351.98; to superintendents of national cemeteries, \$111.38; to steamers, \$463.08; to United States military prison, Fort Leavenworth, Kansas, \$14,886.41; to United States marshals, \$90.57; of condemned stores at auction, \$8,621.45; of boxes, barrels, &c., \$1,747.69; of garden-seeds and agricultural implements, \$416.22; total .....

791,403 63



continued.

taken up by officers doing duty in the Subsistence Department account of stores lost, damaged, &c., and in correction in their accounts during the fiscal year 1879:

of the Army, 1879.....	\$1,637 64
sources.....	<u>3,447,801 11</u>

## EXPENDITURES.

ded on the books of the Treasury from the appropriate Subsistence Department during the fiscal year 1879, as

istence of the Army, 1877:		
ment of the accounts of officers.....	\$55 63	
ment of liabilities incurred in fiscal year 1877.....	<u>710 33</u>	\$765 96
istence of the Army, 1878:		
ment of the accounts of officers.....	5 80	
ment of liabilities incurred in the fiscal year.....	20,988 12	
to officers for disbursement (but refunded contra).....	<u>3,481 91</u>	24,475 83
istence of the Army, 1879:		
ment of liabilities incurred in fiscal year 1879.....	223 74	
ims for quartermaster's stores and commissary supplies ly 4, 1864), per act April 30, 1878.....	10 50	
ims for quartermaster's stores and commissary supplies ly 4, 1864), per act March 3, 1879.....	10,152 28	
umutation of rations of prisoners of war in rebel States, June 14, 1878.....	1,348 75	
cellaneous claims audited by Third Auditor, under fourth act June 14, 1878, per act March 3, 1879.....	7,545 25	
rsed by officers of the Subsistence Department and officers the Subsistence Department during the fiscal year 1879,		
of the Army, 1878.....	157,837 11	
of the Army, 1879.....	<u>2,784,687 06</u>	
ed by officers doing duty in the Subsistence Department of errors in their accounts during the fiscal year 1879....	222 17	
ded for the subsistence of military prisoners at United ry prison Fort Leavenworth, Kans., during the fiscal		
the United States military prison Fort Leavenworth 1879.....	12,632 68	
ed to the Treasury near close of fiscal year 1879, but not e credit of the appropriation by June 30, 1879:		
e of the Army, 1879.....	6 00	
ed to the surplus fund on June 30, 1879:		
e of the Army, 1876.....	\$52 78	
e of the Army, 1877.....	<u>3,515 41</u>	3,568 19
expenditures.....	<u>3,003,475 52</u>	

## BALANCES UNEXPENDED.

the Treasury to the credit of appropriations of the Subsistence on June 30, 1879, as follows:

e of the Army, 1878.....	\$7,747 99
e of the Army, 1879.....	\$2,014 42
United States military prison Fort Leavenworth, ana., 1879.....	10,801 50
quartermaster's stores and commissary supplies July 4, 1864, per act March 11, 1878.....	<u>67 55</u>
	20,631 46

## Balances unexpended—Continued.

Amounts to the credit of officers of the Subsistence Department and of officers doing duty in the Subsistence Department with the Treasurer, assistant treasurer, and designated depositaries, and in their personal possession, on June 30, 1879, as follows:

Subsistence of the Army, 1878.....	\$244 00	
Subsistence of the Army, 1879.....	421,423 85	
Support of the United States military prison Fort Leavenworth, Kans., 1879 (including Treasury drafts for \$575 in transitu) on June 30, 1879.....	1,539 25	\$7 10
		423,207 10
Amount in hands of representatives of deceased officers to be collected:		
Subsistence of the Army, 1878 .....		109 84
Amount stolen in October, 1878, to be collected from the officer responsible:		
Subsistence of the Army, 1879.....		377 19
Total balances unexpended .....		444,325 59

In connection with the subject of appropriations for subsistence of the Army, I desire to invite your special attention, and through you that of Congress, to the following note upon the estimate for appropriations for subsistence of the Army for the fiscal year ending June 30, 1881:

It is respectfully recommended that the appropriations for subsistence of the Army be made available from the passage of the act making the appropriation. For several years a portion of the appropriation (\$300,000) has been made available prior to the commencement of the fiscal year for the purchase of supplies intended for remote posts. Should the appropriation for the year be made available from the passage of the act making it, it will, it is believed, be in the interest of economy, by enabling the purchase and shipment not only of all stores for remote posts, which can be more economically shipped in the spring than after the 30th of June, but of those which should be shipped early in the spring, instead of the heat of summer, to avoid loss and transportation. In the act making appropriations for expenses of the Indian Department for the year ending June 30, 1880, it was provided "that so much of the appropriation \* \* \* made as may be required to pay for goods and supplies \* \* \* shall be immediately available."

## CONTRACTS AND PURCHASES.

During the fiscal year ended June 30, 1879, 131 newspaper advertisements and 111 circulars and posters inviting proposals for subsistence stores were reported to this office. There were, also, received during the same period 343 contracts for fresh meats, 89 contracts for miscellaneous articles, 30 contracts for complete rations for recruiting parties and recruits, and 1,860 contracts consisting of written proposals and acceptances.

It has been my intention that, as far as consistent with a due regard to economy and the procurement of stores of a proper quality, supplies should be purchased from producers and manufacturers or importers nearest the points of consumption. It may be that my wishes and instructions have not been entirely complied with in some cases, but as a rule the plan I have above indicated has been carried out.

In connection with the subject of points of procurement of supplies and the furnishing of supplies to posts, attention is invited to the following extracts from the annual reports of officers of the Subsistence Department for the last and previous years:

In the annual report of Maj. J. P. Hawkins, chief commissary of subsistence, Department of the Platte, for the year 1877, he states:

Fort Cameron, Utah, is \* \* \* supplied from Omaha, except flour, vinegar, and vegetables; flour being purchased in the vicinity of the post, vinegar at Ogden, and vegetables in the vicinity of the post, and largely produced in company gardens.

Cheyenne Depot, Wyoming, on the line of the Union Pacific Railroad, 516 miles from Omaha, is used as a distributing depot. Large quantities of Colorado flour are pur-



placed here for shipment to the different posts; also, potatoes and onions, and occasionally hard bread.

Camp Douglas, Utah, is \* \* \* supplied from Omaha, except flour, dried peaches, salt, vinegar, and vegetables, which are purchased at Salt Lake City and Ogden.

In his report for the last fiscal year he states:

During the past year a mill has been started in the vicinity of Fort Brown, Wyoming. Samples of the flour and prices were furnished me and found satisfactory. The acting commissary of subsistence at Fort Brown was instructed to purchase some of the flour and report to the chief commissary of subsistence of the department about the 1st of September, 1879, as to the quality compared with flour heretofore furnished the post and the price at which it could be obtained.

Capt. J. H. Gilman, chief commissary of subsistence, Department of the Missouri, in his annual report for the last fiscal year, states:

As a rule, all posts in this department have been supplied in the manner described in my report of August 27, 1878, and the very small amounts of subsistence stores lost or spoiled at posts in this department during the last two years go to show the economy of often replenishing stores at posts by frequent shipments, instead of putting in supplies for six or eight months at a time, as was formerly the practice before the extension of the railroads. It has also the advantage of securing for the officers and men better food by sending fresh stores from month to month. \* \* \*

There are now several very extensive packing-houses in this vicinity (at Kansas City and Atchison), which afford largely-increased facilities for purchasing all kinds of salt meats and at considerably lower prices probably than they could be purchased elsewhere and laid down here. The sugar-cured meats especially, which have been purchased here in the past year for the first time in very large quantities from packers located in this vicinity, have apparently given general satisfaction both as to price and quality.

The wheat crop of Kansas this year is very large, and large mills are constantly being erected, so that there is every prospect of an abundant supply of flour at low prices during the present year. All the flour purchased here is made from winter or fall wheat, and of excellent quality. A large portion of that purchased here is taken directly from the millers in the country between here and the posts, saving thereby something in price and considerable in transportation. Large quantities of excellent flour has for several years been taken at Junction City and Wichita.

On account of the reduction in cost of transportation and of some complaints still of New Mexican flour, it was thought advisable to supply the posts in New Mexico this present year with a large proportion of States flour than heretofore, and the chief commissary of subsistence of the district of New Mexico was so advised.

From his report of July 26, and indorsement thereon, this view is concurred in by both the district commissary of subsistence and district commander, both of whom evidently regarding an increase in quantity of States flour as very necessary.

The following is an extract from the report of the chief commissary of the District of New Mexico (Capt. F. F. Whitehead):

During the past fiscal year all States flour has been issued at the posts of Forts Union, Garland, and Lewis; and, owing to the fact that contracts for wagon transportation to the majority of posts in this district have been let from Las Vegas, N. Mex., the chief commissary of subsistence of the Department of the Missouri has decided to furnish, in future, all States flour for issue at Fort Marcy and half at all other posts, and beans and salt to all posts in the district where he can have them delivered from the depot at Fort Leavenworth at a less cost to the government than they can be purchased for in New Mexico. The increased allowance of States flour for issue will be a decided improvement, as it seems impossible to manufacture a good grade of flour in this Territory.

Capt. C. B. Penrose, chief commissary of subsistence, Department of Texas, states that—

The Texas flour has proved under their improved system of milling very satisfactory, and although not quite equal in whiteness to Saint Louis flour, makes when mixed equally good bread. \* \* \*

It is to be regretted that owing to the extreme drought the wheat crop is a failure in many parts of this State, and it is feared that many mills in the State will be unable to compete in the lettings for the coming year.

Capt. C. P. Eagan, chief commissary of subsistence, Department of Arizona, reports that—

Flour for issue is now purchased under contract for all the posts in the department, except for Forts Yuma and Mojave, which latter are supplied on requisition from the

depot at San Francisco, as the government can lay down flour at those posts at less figures than the millers can deliver it from the grain-raising districts of the Territory. The flour procured under contract comes from Arizona and New Mexico, and is not equal to the California article.

The following table will indicate the average prices of the components of the ration in each year for the last three years:

Articles.	1877.	1878.	1879.
	Per pound, gallons, &c.	Per pound, gallons, &c.	Per pound, gallons, &c.
	<i>Cents.</i>	<i>Cents.</i>	<i>Cents.</i>
Pork .....	9.24	6.53	5.10
Bacon .....	10.93	8.74	6.68
Fresh beef .....	8.497	8.289	7.02
Salt beef .....	8.98	7.22	5.84
Flour .....	3.56	3.40	2.61
Hard bread .....	5.08	5.33	4.65
Cornmeal .....	1.71	1.01	1.51
Beans .....	3.26	3.74	2.91
Peas .....	3.68	3.50	3.32
Rice .....	6.85	7.12	7.08
Hominy .....	2.78	2.29	1.94
Coffee, green .....	21.48	20.56	16.25
Coffee, roasted .....	26.68	25.94	22.71
Sugar .....	10.60	9.55	8.27
Vinegar .....	23.45	21.44	18.87
Candles .....	16.12	15.47	14.36
Soap .....	6.06	5.68	5.21
Salt .....	.803	.891	.722
Pepper .....	27.01	26.14	21.84

It will be observed that the cost of supplies has been constantly diminishing since 1877, notably in the meat and flour components of the ration. The construction of railroads, the settlements in the vicinity of posts, the cultivation of lands adjacent thereto, and their utilization in feeding stock, have greatly reduced the cost of feeding the Army, by reducing the original cost of the stores and of transportation, and by avoiding the wastage and loss which formerly resulted from procuring stores from remote points, transporting them long distances, and keeping them on hand in large quantities for long periods.

Attention is particularly invited to the interesting paper on the cattle and sheep interests of Wyoming and Colorado, prepared by Capt. W. H. Nash, commissary of subsistence, transmitted with this report, and which I request may be considered as a part hereof, and be published with it.

#### ISSUES TO INDIANS AND TRANSFER OF SUBSISTENCE TO INDIAN AGENTS.

The value of stores (cost of transportation added) issued to Indians and transferred to Indian agents during the fiscal year ending June 30, 1879, for which reimbursement has been requested through the Secretary of War, from the Indian Bureau, the date and place of issue or transfer, and to whom made, is presented in the following table:

Grand totals brought forward.....	\$47,546.55 + \$8,229.67 = \$55,776.22
Amount received from Indian Department on account of above is.....	664.23

Balance due Subsistence Department.....	55,111.99
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It will be observed that the Subsistence Department has been reimbursed but little in excess of one per cent. of the value of the stores,

\$55,776.22, which have been issued and transferred, as appears from the above statement.

In order that the views of the Indian Department and this Bureau upon the subject of issues to Indian prisoners may be properly understood, attention is invited to the following communications and indorsement:

DEPARTMENT OF THE INTERIOR,  
OFFICE OF INDIAN AFFAIRS,  
Washington, April 21, 1879.

SIR: I have the honor to acknowledge the receipt, by reference from the department, of a letter of the honorable Secretary of War, dated April 14, 1879, inclosing one from R. Macfeely, Commissary-General of Subsistence, requesting you to cause the Subsistence Department to be reimbursed for all sums due on vouchers, for subsistence stores furnished to Indians, submitted to the department during the fiscal years 1878 and 1879.

In reply, I would state that this office is in receipt of a large number of vouchers for subsistence issued by the War Department to Indian prisoners during the fiscal years 1878 and 1879; but Congress has failed to make any appropriation to this office for the payment of said claims.

On examination of the estimates of appropriations required for the service of the military establishment under the War Department for the fiscal years 1878 and 1879, I find under the head of "Subsistence Department, subsistence of the Army," an estimate for 182,500 rations, at 24 cents per ration, for each year for prisoners of war (Indians), and in the acts making appropriations for the support of the Army for the fiscal years 1878 and 1879, in the section providing for the Subsistence Department, the following language is used: "For subsistence of regular troops, Indian scouts and guides, and Indian prisoners," &c., two million three hundred and seventy thousand dollars for 1878, and two million three hundred and fifteen thousand dollars for 1879. I am therefore of the opinion that Congress has made provision for the support of Indian prisoners in the Army appropriation bills for 1878 and 1879. There are no funds at the disposal of this office for the payment of the accounts presented, and the same will be held subject to the order of the honorable the Secretary of War.

Very respectfully,

E. J. BROOKS,  
*Acting Commissioner.*

HON. SECRETARY OF THE INTERIOR.

DEPARTMENT OF THE INTERIOR,  
Washington, April 25, 1879.

SIR: I have the honor to acknowledge the receipt of your letter of the 14th instant, inclosing a communication from General R. Macfeely, Commissary-General of Subsistence, calling for reimbursement to the Subsistence Department for all sums due on vouchers for subsistence stores furnished to Indians, submitted to the department during the fiscal years 1878 and 1879.

In reply, your attention is respectfully invited to the inclosed copy of letter, dated the 21st instant, from the Commissioner of Indian Affairs, to whom the subject was duly referred.

Very respectfully,

C. SCHURZ, *Secretary.*

The Hon. SECRETARY OF WAR.

[First indorsement.]

WAR DEPARTMENT,  
OFFICE COMMISSARY-GENERAL OF SUBSISTENCE,  
Washington, May 9, 1879.

Respectfully returned to the honorable Secretary of War, with the recommendation that the Indian Department may be requested to reimburse the Subsistence Department the cost of the rations issued by it during the current fiscal year for the subsistence of whom by the Indian Department appropriations were made, whether the Indians were prisoners or not when the Subsistence Department made the issues.

The accompanying statement, marked A, will indicate that issues to the value of \$15,004.09 have been made during the current fiscal year to *Indians not prisoners.*

The statement marked B, that issues to the value of \$32,147.85 have been made to *Indians who were prisoners.*

While it is true that an estimate was submitted by this department for subsisting 500 Indian prisoners during the current fiscal year and an appropriation for the purpose made, it was not understood by me that this appropriation or any portion of it could be expended (unless the department was to be reimbursed) for subsisting

Indians for the subsistence of whom by the Indian Department an appropriation had been or should be made; but it was intended for Indian prisoners for the subsistence of whom there was no other appropriation; in other words, it was not proposed by this department to ask that a double appropriation for the subsistence of any Indians be made, and it is respectfully submitted that this department should be reimbursed for the value of all issues made by it to Indians for the subsistence of whom an appropriation has been made and turned over to the Indian Department.

It is respectfully submitted that the cost of subsisting Indians is not legally transferred from the Indian to the War Department simply by the Indians becoming prisoners of war, and that the Indian Department cannot legally expend the money appropriated for the subsistence of such prisoners in subsisting other Indians, as appears to have been the case, if it has now no funds to pay for subsisting Indian prisoners for the subsistence of whom it had an appropriation.

With reference to the statement of the Acting Indian Commissioner that there are no funds at the disposal of that office for the payment of the accounts presented, it is respectfully suggested that, if the accounts are proper ones to be paid, Congress is now in session and appropriations for the purpose can be requested; in the mean time, I recommend that no further issues be authorized by the War Department to Indians for the subsistence of whom, under the direction of the Interior Department, an appropriation has been made, unless that department agrees to reimburse the Subsistence Department the cost of the rations issued.

R. MACFEELY,

*Commissary-General of Subsistence.*

Comment on the above is unnecessary. The papers submitted present the views of the Indian Department and of this office, with reference to reimbursement for the issues and transfers made, and exhibit the fact that a large amount justly due to this department by the Indian Department has not been paid.

In making my estimate for appropriation for the next fiscal year, I have included in the estimate for prisoners of war only Indians "for the subsistence of whom no other appropriation is made," being of the opinion, as stated in the indorsement above referred to, that it was not intended that "double appropriations" should be made for the same persons.

In addition to the issues and transfers for which reimbursement was requested, stores have been issued to Indians, and reimbursement not requested, as follows:

To friendly Indians.....	\$1,360 13
To destitute Indians.....	558 96
To Indians visiting posts under paragraphs 1202 and 1203, Revised Regulations, edition 1863.....	669 84

#### ISSUES TO VOLUNTEERS AND DESTITUTE PERSONS.

By reason of the necessities of the service and the demands of humanity, the following issues have been made during the fiscal year 1879:

	Rations.
To volunteers.....	1,744
To destitute citizens and citizen prisoners.....	3,879

On the 28th of September the Secretary of War authorized the issue of provisions to sufferers from the Deadwood fire, the issues to be limited to such quantities as could be spared from Fort Meade, without too far diminishing necessary supplies for that post, and to be continued only while it is impossible for the sufferers to procure stores elsewhere.

#### OIL.

The issues of oil for exterior illumination at the various posts under the provisions of General Orders No. 17, Headquarters of the Army, Adjutant-General's Office, February 8, 1870, amount to 5,771½ gallons for the fiscal year 1879.

On the 8th day of May, 1879, I recommended to the honorable Secretary of War, that the major-general commanding the Military Division of the Atlantic be instructed to convene a board of officers at Fort Columbus, New York Harbor, for the purpose of "fully examining into and reporting upon the subject of lighting company quarters with oil," and that the board "should consist of an inspector-general, a quartermaster, a commissary, a medical officer, and the commanding officer of Fort Columbus."

As this recommendation was not at first favorably considered, I renewed the application to the honorable Secretary of War on June 5, 1879, stating—

The subject of properly lighting company quarters so that a suitable place for instruction and recreation in the evening may be afforded enlisted men, and they thus be induced to spend their spare time in the evenings in their quarters instead of at questionable places of resort, has on several occasions been brought to my attention, and I wish to do all that I can to afford the means to effect such a desirable result. I do not believe such a result can be effected with the present allowance of candles, nor with any allowance of candles as cheaply as with oil.

The honorable Secretary of War reconsidered his decision after the receipt of the communication from which the above is an extract, and directed that a board should be ordered as originally requested.

The board was appointed by Maj. Gen. W. S. Hancock, commanding Military Division of the Atlantic, and consists of Col. N. H. Davis, inspector-general, Col. M. D. L. Simpson, Subsistence Department, Assist. Surg. J. P. Kimball, Capt. J. P. Sanger, First Artillery, and First Lieut. Charles Bird, Twenty-third Infantry.

It is understood that the board is making an exhaustive investigation of the subject referred to; and I trust that the result will be reached at an early date of lighting company quarters in such a manner as to secure the end sought by me in making my recommendations for the appointment of a board.

#### ARTICLES TO BE SOLD TO OFFICERS AND ENLISTED MEN.

I would respectfully renew the recommendation made in my last annual report:

That section 1144 Revised Statutes be so amended as to authorize the Commissary-General, with the approval of the Secretary of War, to designate the articles which shall be kept on hand by the Subsistence Department for sale to officers and enlisted men, and that sections 1299 and 1300 be amended accordingly.

The returns of the stores purchased and sold being examined in this office, the Commissary-General can readily determine which of the articles purchased is not in demand, or cannot be supplied without much loss to the government; and the wants of the officers and enlisted men can probably be more readily obtained by the Commissary-General, who is in constant correspondence with the officers performing subsistence duty at all posts, than by the inspector-general, who visit the posts at intervals.

In the act making appropriation for subsistence of the Army for the current fiscal year, it is—

*Provided*, That to the cost of all stores and other articles sold to officers and men, except tobacco, as provided for in section one thousand one hundred and forty-nine of the Revised Statutes, ten per centum shall be added to cover wastage, transportation, and other incidental charges.

I recommend that to the exception made, viz, tobacco, "provided for in section one thousand one hundred and forty-nine," there be added, sales made to company messes. Such stores are, as a rule, purchased from funds received by the companies from the sales of savings of the ration to the Subsistence Department, and as the department pays the companies only the cost of the stores it purchases from them, it is thought that it is hardly



just to them to charge for supplies sold, to be used by the messes in lieu of the articles sold to the department, ten per centum in addition to their cost.

#### TOBACCO.

During the fiscal year ending June 30, 1879, returns received show that tobacco to the value of \$125,211.42 was supplied to enlisted men on tobacco returns.

In addition to the above, 28,927½ pounds of chewing, and 37,276½ pounds of smoking tobacco were sold to officers and enlisted men.

I deem it due to the enlisted men of the Army to especially invite your attention to the following extract from my last annual report, and to urge that the attention of Congress be invited to it:

From information received at this office, I am of the opinion that 16 ounces per month is not as much as a majority of enlisted men desire to purchase. I therefore recommend that the limit be increased by law to 24 ounces per month.

I also recommend that the law be further modified so as to allow the tobacco to be paid for upon its receipt, or, if not paid for, charged upon the pay-rolls of the soldier for the month in which the purchase is made.

#### SUPPLIES LOST IN TRANSPORTATION, AND CONDEMNED.

The value of the stores reported on returns for the year ending June 30, 1879, as lost in transportation and no one found responsible therefor, and as extraordinary wastage, &c., is.....	\$11,596 73
The value of supplies inspected and condemned during the same period was.....	\$21,819 80
From such of the above as were sold there was realized the sum of.....	8,777 37
Net loss to the government on account of supplies condemned.....	13,042 43
Total loss on account of stores lost in transportation and condemned.....	24,639 16
The value of the stores lost in transportation during the fiscal year 1879, where responsibility for the loss has been fixed, is.....	1,757 86
The amount collected and taken up on officers' accounts or covered into the Treasury on above account, is.....	481 18
Leaving balance to be collected and covered into the Treasury.....	1,276 68

#### SUBSISTENCE OF RECRUITING PARTIES AND RECRUITS.

The amount expended during fiscal year for subsistence of recruiting parties and recruits was \$26,631.49.

#### COMMISSARY-SERGEANTS.

During the last fiscal year three commissary-sergeants have been tried and found guilty of misappropriation of subsistence stores or funds, and dishonorably discharged the service, forfeiting all pay and allowances due them. One of them was sentenced to imprisonment for eight years for his offenses. In the case of a fourth it was found, after his discharge by expiration of service, that a deficiency in stores existed for which he is claimed to have been responsible.

After a careful examination of the evidence thus far submitted in each of the first three cases above referred to, I have reached the conclusion that in no case could the misappropriations have occurred to the extent that they did had the officers with whom those sergeants were serving properly performed their duties. I have recommended that the forfeited pay and allowances of those dismissed by sentence of court-martial be



transferred to the credit of the appropriations of the Subsistence Department to be applied as a reimbursement for the losses which have occurred; and should the losses in any cases be in excess of the amounts so forfeited, I shall, in the absence of further evidence to relieve the officers of the appearance of neglect of duty on their part, recommend that they be held pecuniarily responsible to the government for the remainder necessary to make a complete reimbursement.

The duties and responsibilities of officers doing duty in the Subsistence Department, who may be assisted by commissary-sergeants, are fully set forth in paragraphs II, III, and IV, General Orders No. 31, Headquarters of the Army, Adjutant-General's Office, 1878. It had been my expectation, upon the promulgation of that order, that proper care would thereafter be taken against losses by the malfeasance of any commissary-sergeant, but I regret that the object of that order has not been more fully attained than the results of the past year indicate.

#### CIVILIAN EMPLOYÉS.

In my annual report for the year 1876, I stated the number of civilian employés to be 51 clerks and 75 other employés, 126 in all; and that "it is believed that but little, if any, further reduction can be made without impairing the efficiency of the department." The number of clerks employed in June last was the same as reported in 1876, the number of other employés 68, a reduction of 7 employés. The clerical force appears to be reduced to about the minimum consistent with efficiency.

#### ARMY COOKS AND BAKERS.

On the 8th of November, 1876, I stated in a communication to the honorable Secretary of War:

I am of the opinion that the efficiency of the Army would be materially increased, and desertions lessened, were a cook enlisted for each company with extra pay, say \$4 in excess of the pay of a private, and schools for the instruction of cooks established at the recruiting-depôts at Fort Columbus, N. Y., and Columbus Barracks, Ohio.

In my annual report for the year 1876, I stated—

I also think that bakers should be specially enlisted, paid extra-duty pay, say \$4 per month, and assigned to posts as commissary-sergeants. I recommend that should schools for cooks be established at recruiting-depôts, bakers should also be instructed at the same schools.

I again invite the attention of the honorable Secretary of War to this subject in connection with the following extract from the report of the Board on Army Cooking, convened by General Orders No. 117, Headquarters of the Army, Adjutant-General's Office, series of 1877:

The Army needs the enlistment of men who have an aptitude for cooking, and the establishment of a school for their education in the economy of the kitchen. \* \* \*

Extra compensation is allowed to enlisted men when on duty as mechanics, artisans, and laborers, when performing such work, but none to the company cook, whose duty, if conscientiously done, is the most onerous performed by the enlisted man. Eight hours is the time fixed for the labor of the extra-duty men, who are rated and paid as such. The duties of the competent and conscientious company cook commence two hours before reveille, and frequently are not concluded before tattoo. The wear and tear of the clothes of a company cook is double that of any enlisted man in the same company, yet the cook receives no extra compensation therefor, whilst the carpenter, blacksmith, or laborer detailed from the same company does.

An important aid to good soldiering is good cooking. This cannot be obtained without good cooks, and good cooks cannot be obtained without education and adequate compensation. If one company cook, while actually performing duty as such, was allowed 50 per cent. advance on his clothing allowance and a monetary compensation

of 30 per cent. per day, to be paid either from the Subsistence Department or the Quartermaster Department, a class of men would be secured to the Army who would economically use the ration, cook it acceptably, and be anxious to retain his position for the extra compensation it brings, whilst at present he is only glad to be relieved from kitchen duty for lighter work.

I respectfully urge the Secretary of War to invite the attention of Congress to this subject, believing the subject one of the utmost importance in connection with the health, comfort, and efficiency of the enlisted men of the Army.

#### ARMY COOKING.

The board appointed by General Orders No. 117, Headquarters of the Army, Adjutant-General's Office, series of 1877, to make experiments in Army cooking and prepare a manual for Army cooks, has completed its labors in the most satisfactory manner. Authority has been given by the Secretary of War for the publication and distribution to the Army of such portion of the manual as in the opinion of the Surgeon-General and myself appeared best adapted to the purpose for which the same was desired.

#### BUREAU CLERKS.

I had intended to set forth in this report what I deem the necessity for a reorganization of the number and classes of clerks in this office; but the Secretary of War having, under date of September 17, directed that this shall be made the subject of a special communication to be submitted to him after the meeting of Congress, its consideration is therefore deferred.

#### ACCOUNTS AND RETURNS.

There were received during the year from 467 officers performing duty in the Subsistence Department the following accounts and returns, viz :

Accounts-current.....	2,614
Returns of provisions.....	2,425
Returns of commissary property.....	960
Total received.....	5,999

During the same period there were examined in this office and forwarded to the Third Auditor (the returns for file and the accounts-current for final settlement) the following :

Accounts-current.....	2,558, accompanied by....	36,092 vouchers.
Returns of provisions.....	2,396, accompanied by....	30,189 vouchers.
Returns of commissary property.....	952, accompanied by....	2,376 vouchers.
Total.....	5,906, accompanied by....	68,657 vouchers.

In connection with the above there were 4,722 letters written, and 1,077 referred by endorsement.

When it is understood that the examination of the accounts and returns, and of the vouchers submitted therewith, includes a careful examination and revision of all the computations involved, as well as the ascertainment of the fact whether all laws, regulations, and orders relating to purchases, to payments, and to issues have been complied with in every detail of the accounts and returns, the extent and importance of the clerical labor concerned will be appreciated.

In addition to the money accounts and returns of property, returns of official postage-stamps to the number of 1,574, accompanied by 4,705 vouchers, have been examined and filed.

As accounts and returns were received from 223 officers during the

month of June last, it appears that about 200 officers not belonging to the Subsistence Department were performing subsistence duty. This number, it is assumed, is about the average number constantly employed during the year.

#### CLAIMS RECEIVED AND DECIDED.

*Act July 4, 1864.*—Under the third section of the act of July 4, 1864, and the acts supplementary thereto, 294 claims were filed in this office during the fiscal year 1879 for examination. Decisions have been rendered, during this period, in 43 cases of this class of claims. Of these, 21, amounting to \$15,778.89, were allowed, and recommended to the Third Auditor of the Treasury for payment, and 22, amounting to \$14,815.60, were rejected. The number decided embraced 21 cases re-examined upon additional evidence, of which 15 were allowed and 6 again rejected.

*Commutation of rations of prisoners of war.*—During the fiscal year, 1,288 claims for commutation of rations to Union soldiers while held as prisoners of war were received at this office. Of this class of claims 23 were not reached for examination; 1,476 were partially examined; 601 were rejected; and 329, amounting to \$11,198.43, were allowed and recommended to the Third Auditor of the Treasury for payment.

*Miscellaneous claims.*—In addition to claims under the above-mentioned special acts of Congress, 247 miscellaneous claims, amounting to \$34,048.32, were received during the fiscal year; of which 93, amounting to \$26,748.36, were recommended for payment; 46, amounting to \$5,546.35, were rejected; 103, amounting to \$1,679.05, partially examined; and five, amounting to \$74.56, were not reached for examination. Of this class of claims, 70 old cases were completed and allowed in the sum of \$2,742.89; 29, amounting to \$3,187.66, rejected; and 26, amounting to \$848.20, partially examined. Of rejected (old) claims of this class, 15 were re-examined upon additional evidence; 5 of which, amounting to \$160.80, were allowed; 3, amounting to \$1,105.80, were again rejected; and 8, amounting to \$243.55, were not reached for decision.

*Letters and indorsements.*—In connection with the above-mentioned three classes of claims, 8,878 letters and indorsements were written.

#### CLAIMS PENDING.

The following-described claims were pending in this office at the close of the fiscal year, viz:

*Act July 4, 1864.*—Under section 3, act of July 4, 1864, 1,066 claims, amounting to \$716,861.89; of which 683, amounting to \$494,155.83, have been partially examined, and 383, amounting to \$222,706.96, have not been reached for examination.

*Commutation of rations of prisoners of war.*—Two thousand four hundred and fifty-six claims for commutation of rations (prisoners of war), the amount of which cannot be approximately estimated. Of these, 2,433 have been partially examined, and 23 not reached for examination.

*Miscellaneous claims.*—Four hundred and five miscellaneous claims, amounting (estimated, in part) to \$32,755.30, all of which have been partially examined, with the exception of 5, amounting to \$74.56.

By section 3 of the act approved March 3, 1879, it is provided "that all claims under the third section of the act of July 4, 1864, and the acts supplementary thereto, which are not presented and filed prior to the 1st day of January, A. D. 1880, shall be forever barred." During the last year less than 300 claims under these acts were presented. It may be assumed that the claims which will be presented between July 1, 1879, and January 1, 1880, will not exceed 150. Should this number be

presented, the number of this class then to be examined will be about 1,200. It is due to the claimants and the government that they should be examined at the earliest practicable date, and it is suggested that the necessary legislation to enable this to be done shall be recommended to Congress, there being no authority of law at present for the employment of officers or agents in making the required investigations in connection with these claims.

In bill H. R. 2, Forty-sixth Congress, first session, proposing "appropriations for the legislative, executive, and judicial expenses of the government for the fiscal year ending June 30, 1880, and for other purposes," and was concurred in by the Senate, although the bill did not become a law, was the following clause, viz: "That the Secretary of War is hereby authorized to detail as many officers of the Army as may be necessary to investigate claims not heretofore examined by the Commissary-General for allowance." I recommend that the proposed act be so modified as to authorize the Commissary-General to detail such officers of the Subsistence Department as may be necessary to investigate claims not already decided by him, or those which, having been decided, may be reopened on account of the new evidence submitted. I am of the opinion that all the examinations necessary may be made by officers of the Subsistence Department, and that the service of no other officers will be required.

#### STATIONS OF OFFICERS OF THE SUBSISTENCE DEPARTMENT.

The stations of officers of the department on the first of October is shown in the report hereto appended.

The following changes in stations have been made since my last annual report:

Maj. Thomas C. Sullivan, from duty as purchasing and depot commissary of subsistence at New Orleans, La. to Vancouver Barracks, Wash., as chief commissary of subsistence, Department of the Columbia, December 10, 1878.

Capt. William H. Bell, from duty as chief commissary of subsistence, Department of the Columbia, to New Orleans, La., as purchasing and depot commissary of subsistence, relieved from that duty June 2, 1879, and assigned to duty as purchasing and depot commissary of subsistence at Washington, D. C., June 10, 1879.

Capt. Thomas Wilson, from duty as purchasing and depot commissary of subsistence at Washington, D. C., to Omaha, Nebr., as chief commissary of subsistence, Department of the Platte, July 1, 1879.

Maj. John P. Hawkins, from duty as chief commissary of subsistence, Department of the Platte, Omaha, Nebr., to New York City, N. Y., as purchasing and depot commissary of subsistence, August 1, 1879.

Maj. Beekman DuBarry, from duty as purchasing and depot commissary of subsistence at New York City, N. Y., to West Point, N. Y., as treasurer of the Military Academy, and quartermaster and commissary of the battalion of cadets, and also as disbursing officer of the Military Academy, September 1, 1879.

Capt. Charles A. Woodruff, depot commissary of subsistence at Fort Leavenworth, Kans., was (by Special Orders 218, Headquarters of the Army, Adjutant-General's Office, September 20, 1879) ordered to relieve Capt. F. F. Whitehead of his duties as chief commissary of subsistence of the District of New Mexico. Captain Whitehead on being relieved to proceed to New Orleans, La., on or before November 15, 1879, and assume the duties of purchasing and depot commissary of subsistence in that city.

In compliance with instructions given by the division and department



commander at suggestions from this office, Capt. S. T. Cushing was temporarily relieved of his duties as purchasing and depot commissary of subsistence at San Francisco, Cal., June 7, 1878, and ordered to report for duty to the commanding general, Department of the Columbia. Captain Cushing served as acting chief commissary of subsistence, Department of the Columbia, in the field, to September 11, 1878, when he was relieved and ordered to join his station at San Francisco, Cal., where he arrived on September 14, 1878, and resumed his duties as purchasing and depot commissary of subsistence, September 16, 1878.

It would be in the interest of economy if officers of the department were available to accompany all large commands taking the field, to be assigned to duty with such commands and required to perform duties as chief commissaries with them in the field. I regret that the limited number of officers of the department has not enabled me in all cases to recommend the assignment of officers to such commands, and that in some cases where they have been assigned they have not been allowed to perform their proper duties. The interests of economy and of the service in general have not been subserved by such refusal or neglect.

Very respectfully, your obedient servant,

R. MACFEELY,

*Commissary-General of Subsistence.*

The honorable THE SECRETARY OF WAR.

## REPORT OF THE SURGEON-GENERAL.

WAR DEPARTMENT,  
SURGEON-GENERAL'S OFFICE,  
*Washington, October 1, 1879.*

SIR: I have the honor to submit the following statement of finances and general transactions of the Medical Department of the Army for the fiscal year ending June 30, 1879:

### FINANCIAL STATEMENT.

Appropriation for the Medical and Hospital Department, reappropriated for 1871 and prior years:

Balance from previous fiscal year.....	\$1,965 33
Appropriated by act of March 3, 1879.....	1,347 00
Refunded during the year.....	54 00

3,366 33

Disbursed during the year.....	\$3,312 33
Carried to the surplus fund.....	54 00

3,366 33

Medical and Hospital Department, reappropriated for 1872:

Balance from previous fiscal year.....	134 55
Disbursed during the year.....	134 55

Medical and Hospital Transfer Fund, under Act of March 3, 1873:

Balance from previous fiscal year.....	165,190 52
Disbursed during the year.....	\$47 58
Carried to surplus fund.....	165,142 94

165,190 52

Medical and Hospital Department, 1875:

Balance from previous fiscal year.....	198 00
Appropriated by act of March 3, 1879.....	36 00

234 00

Disbursed during the year.....	234 00
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**Medical and Hospital Department, 1877:**

Balance from previous fiscal year.....	\$5 91
Appropriated by act of March 3, 1879.....	1, 295 96
Refunded during the year.....	20 60

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1, 323 47  
1, 309 06

Disbursed during the year.....

Balance June 30, 1879.....

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13 41

**Medical and Hospital Department, 1878:**

Balance from previous fiscal year.....	99, 988 67
Refunded during the year.....	100 00

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100, 088 67  
87, 923 50

Disbursed during the year.....

Balance June 30, 1879.....

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12, 165 17

**Medical and Hospital Department, 1879:**

Appropriated by act of June 18, 1878.....	200, 000 00
Refunded during the year.....	54 00

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200, 054 00  
128, 144 03

Disbursed during the year.....

Balance June 30, 1879.....

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71, 009 97

The greater part of this balance has since been disbursed, and the remainder will be required in fulfilling contracts made before June 30.

**Museum and Library, 1878:**

Balance from previous fiscal year.....	\$2, 274 11
Disbursed during the year.....	2, 274 11

**Museum and Library, 1879:**

Appropriated by act of June 18, 1879.....	10, 000 00
Disbursed during the year.....	9, 284 48

Balance June 30, 1879.....

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715 52

**Medical and Surgical History:**

Balances from previous fiscal year, continued by act of June 18, 1879.....	28, 657 05
Disbursed during the year.....	8, 785 40

Balance June 30, 1879.....

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19, 871 65

**Artificial Limbs, 1877:**

Balance from previous fiscal year.....	15, 399 00
Disbursed during the year.....	\$4, 431 90
Carried to the surplus fund.....	7, 364 80

---

11, 796 70

Balance June 30, 1879.....

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3, 602 90

**Artificial limbs, 1878:**

Balance from previous fiscal year.....	413 67
Drawn from appropriation for 1879 under act of June 20, 1878.....	4, 500 00

---

4, 913 67  
2, 782 10

Disbursed during the year.....

Balance June 30, 1879.....

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2, 131 57

**Artificial limbs, 1879:**

Appropriated by act of June 20, 1878.....	105, 000 00
Transferred for the service of the fiscal year 1878.....	\$4, 500 00
Disbursed during the year.....	66, 453 00

---

70, 953 00

Balance June 30, 1879.....

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34, 047 00



## Appliances for disabled soldiers, 1877 :

Balance from previous fiscal year.....	\$4,715 50
Disbursed during the year.....	\$2 00
Carried to the surplus fund.....	4,713 50
	<hr/> 4,715 50

## Appliances for disabled soldiers, 1878 :

Balance from previous fiscal year.....	2,907 50
Disbursed during the year.....	71 50
	<hr/>

Balance June 30, 1879 ..... 2,836 00

## Appliances for disabled soldiers, 1879 :

Appropriation by act of June 20, 1878 .....	3,000 00
Disbursed during the year.....	92 00
	<hr/>

Balance June 30, 1879..... 2,908 00

Expended in providing trusses for ruptured soldiers, seamen, and marines under the act approved May 28, 1872, extended by the act of March 3, 1879.....	7,979 99
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## ARTIFICIAL LIMBS AND APPLIANCES.

There were furnished during the fiscal year, in kind, trusses, 442 ; artificial legs, 39 ; arms, 2 ; hands, 9 ; appliances for injured legs, 4. By commutation, legs, 168 ; arms, 297 ; feet, 16 ; appliances for injured limbs, 743.

## HEALTH OF THE ARMY DURING THE FISCAL YEAR ENDING JUNE 30, 1879.

The monthly reports of sick and wounded received at this office, up to September 1, represent an average mean strength of 21,716 white and 1,947 colored troops.

Among the *white troops*, the total number of cases of all kinds reported as taken on the sick list was 37,810, being at the rate of 1,741 per 1,000 of mean strength. Of this number, 32,682, or 1,505 per 1,000 of strength, were taken on sick report for disease, and 5,128, or 236 per 1,000 of strength, for wounds, accidents, and injuries of all kinds.

The average number constantly on sick report during the year was 965, or 44 per 1,000 of mean strength. Of these, 761, or 35 per 1,000 of strength were constantly under treatment for disease, and 204, or 9 per 1,000 of strength, for wounds, accidents, and injuries.

The total number of deaths from all causes reported among the *white troops* was 266, or 12 per 1,000 of mean strength. Of these, 162, or 7 per 1,000 of strength, died of disease, and 104, or 5 per 1,000 of strength, of wounds, accidents, and injuries.

The proportion of deaths from all causes to cases treated was 1 to 142.

The total number of white soldiers reported to have been discharged the service on "surgeon's certificate of disability" was 677, or 31 per 1,000 of mean strength.

Among the *colored troops*, the total number of cases of all kinds reported was 3,932, or 2,020 per 1,000 of mean strength. Of these, 3,455, or 1,775 per 1,000 of strength, were cases of disease, and 477, or 245 per 1,000 of strength, were wounds, accidents, and injuries. The average number constantly on sick report was 77, or 40 per 1,000 of strength ; of whom 62, or 32 per 1,000 of strength, were under treatment for disease, and 15, or 8 per 1,000 of strength, for wounds, accidents, and injuries.

The total number of deaths of colored soldiers reported from all causes was 28, or 14 per 1,000 of mean strength. Of these, 15, or 8 per 1,000 of strength, died of disease, and 13, or 6 per 1,000 of strength, of wounds, accidents, and injuries.

The proportion of deaths from all causes to cases treated was 1 to 140.

The total number of colored soldiers reported to have been discharged on "surgeon's certificate of disability" was 42, or 22 per 1,000 of mean strength.

#### WORK PERFORMED IN THE RECORD AND PENSION DIVISION.

The number of new official demands upon this division during the fiscal year for information as to the cause of death in the case of deceased soldiers and the hospital record of invalids was 22,339. Of these, 19,427 were from the Commissioner of Pensions, 2,498 from the Adjutant-General of the Army, and 414 from miscellaneous sources. The total number of new cases was greater by 1,265 than the number received during the previous fiscal year, and greater by 1,954 than the average number of new cases received annually during the nine previous fiscal years.

But, in addition to this large number of new cases, the division was burdened at the commencement of the fiscal year by the arrears of former years, amounting in all on the 1st day of July, 1878, to 16,844 cases, so that the total number of cases to be searched during the year was 39,183.

In my last annual report I explained in detail that the number of cases in arrears had, previous to July 1, 1878, been still larger; but with the additional clerical force which commenced work May 18, 1878, the task of disposing of these arrears had already commenced, and was progressing in a satisfactory manner. During the fiscal year closing June 30, 1879, the same favorable condition of the business of the office continued. Search was made and replies furnished to the proper authorities in 35,183 cases, viz: 30,637 to the Commissioner of Pensions, 4,100 to the Adjutant-General of the Army, and 446 to miscellaneous inquirers. On the 1st of July, 1879, the number of cases remaining on hand unanswered had been reduced to 4,000.

After the 1st of July the work of disposing of the cases in arrears still continued, and by the 26th of the month, notwithstanding the continual receipt of an increasing number of new inquiries, the number of cases remaining on hand unanswered had been reduced to 2,744; so that, had the rate at which new cases were received at the office continued no greater than during the last year, all arrears would have been disposed of in the course of about two months more.

But, since the 1st of July, 1879, a great increase in the number of new cases received has taken place. The average number of new cases, which had been 1,862 monthly during the previous fiscal year, rose during July, 1879, to 2,045, and during the month of August to 4,255. As a consequence, and notwithstanding every effort of which the present clerical force is capable, the number of cases in arrears has rapidly increased. By the 1st of September, 1879, it was 4,651 cases.

This sudden increase in the number of new cases sent to this office is consequent upon the operation of the act of Congress approved January 25, 1879, granting arrears of pensions, &c.,\* and especially the op-

\* Statutes of the United States of America, passed at the third session of the Forty-fifth Congress, 1878-79, chap. 23, p. 265.

eration of the third section of said act, which repeals the statute imposing certain limitations in the prosecution of pension claims. By the provisions of that act a large amount of additional work has been thrown upon the Pension Office, and a very considerable proportion of the new cases are necessarily referred to this office for the hospital records of the soldiers concerned.

To enable the Pension Office to dispose of this increased work, a large increase of its clerical force was provided by the act of Congress approved March 3, 1879, making appropriations for the payment of the arrears of pension, &c.,\* but not a single additional clerk has as yet been authorized to enable this office to meet its share of the work.

It appears to be certain that the number of cases sent monthly to this office for information from the hospital records will continue to increase for some time to come, and that the total number received during the present year will be many thousands in excess of the large number the office was enabled to dispose of last year. With the present clerical force of the division it is impossible that the number of cases searched this year can exceed the number disposed of last. The clerical force remains unchanged, and the men were pushed last year to their utmost capacity. Unless, therefore, a temporary increase in the number of clerks employed be authorized by law to meet the emergency, the work of the office must again fall into arrears, and a deplorable delay in the adjustment of a large number of pension cases will inevitably result.

It would be possible, in the building now occupied by the Record and Pension Division, for forty additional clerks to work to advantage, and I earnestly recommend the employment of that number, in addition to those already on duty in this office, to enable me to meet the increased demands referred to with reasonable promptness. I also recommend a small appropriation for additional furniture to accommodate this increase in the clerical force.

Besides the work of searching just discussed, a certain amount of current record work is annually performed in this division. During the past fiscal year 2,589 monthly reports of sick and wounded have been received from the medical officers in charge of the various posts and stations. These have been examined, consolidated on statistical sheets for use, and the deaths and discharges entered in the appropriate alphabetical registers. Nine hundred and seventy-six monthly meteorological reports were received from medical officers, which have been transmitted to the Chief Signal Officer of the Army for his use, and 781 reports of the medical examination of recruits were received and filed. It not being possible, in view of the present demands upon the clerical force of the division, to undertake their discussion at the present time

#### DIVISION OF SURGICAL RECORDS.

In the Division of Surgical Records the surgical reports received from medical officers of the Army at posts with detachments of troops engaged in Indian hostilities were examined, and the cases reported were classified according to the seat or nature of injury or operation. The surgical portion of the Medical and Surgical History of the War was continued, and the descriptive catalogues of the surgical, anatomical and miscellaneous sections of the Army Medical Museum were completed to include all specimens received during the fiscal year ending June 30, 1879.

The cases of wounds, accidents, and injuries reported in Class V of the Monthly Reports of Sick and Wounded numbered 5,308, while the

\* Statutes of the United States of America, passed at the third session of the Forty-fifth Congress, 1878-79, chap. 187, p. 469.



mean strength of the Army was 23,663 men. One hundred and seventeen deaths were occasioned by wounds received in action or other violent causes, a proportion of 4.9 per 1,000 of the mean strength.

During the fiscal year ending June 30, 1879, 3,340 official reports were received from medical officers in charge of post hospitals, or with detachments of troops, or with expeditions against hostile Indians. One thousand eight hundred and seventy-nine were regular quarterly reports, 172 were special reports, 12 were reports of casualties, and 1,277 were reports of a miscellaneous character.

Fourteen reports of engagements between Indians and United States troops were received in this division of the office during the fiscal year ending June 30, 1879:

1. A fight between a band of Indians, 400 in number, and a portion of General Howard's command, consisting of Companies A, E, F, G, H, K, and L, of the First Cavalry, took place near Olcut's farm, Oregon, on July 8, 1878. Assistant Surgeon J. A. Fitzgerald, U. S. A., reported that a sergeant and four privates were wounded; one of the latter died the following day, July 9, 1878.

2. Assistant Surgeon D. Weisel, U. S. A., reported that in a skirmish on July 13, 1878, between Umatilla Indians and Captain Miles's command of portions of the Fourth Artillery, First Cavalry and Twenty-first Infantry, near Umatilla Agency, Oregon, a corporal of the Twenty-first Infantry and a corporal of the First Cavalry were wounded.

3. Asst. Surg. J. A. Fitzgerald, U. S. A., reported an engagement at the cañon of the North Fork of John Day's River, Oregon, on July 20, 1878, in which a private of Company E, First Cavalry, received a shot-wound of the scalp.

4. On September 4, 1878, a fight occurred between a party of hostile Bannocks and a detachment of the Fifth Infantry at Bennett's Creek, Montana Territory. Acting Asst. Surg. R. G. Redd reported that Capt. Andrew S. Bennett, Fifth Infantry, was instantly killed, and a private of Company G received a slight wound of the forearm. Indian scout Rock was shot through the bowels and died the same day.

5. On September 6, 1878, 80 enlisted men, 40 each from Companies G and H, Fourth Cavalry, under command of Captain Rendlebrock, Fourth Cavalry, were sent from Camp Supply, Indian Territory, in pursuit of Northern Cheyennes, who had left their reservation early in September. The command came up with the Indians at Turkey Springs, Indian Territory, on September 13, when a fight ensued, which lasted two days. Asst. Surg. T. E. Wilcox reported a corporal and two privates killed, and two privates and an Apache volunteer scout wounded.

6. Asst. Surg. W. S. Tremaine, U. S. A., reported that in a skirmish with hostile Indians, near Bear Creek, thirty-five miles from Fort Dodge, Kans., on September 18, 1878, a private of Company I, Fourth Cavalry, was severely wounded.

7. Acting Asst. Surg. T. A. Davis reported an engagement at Punished Woman's Fork of Beaver Creek, Kansas, with Cheyenne Indians, September 27, 1878, in which Lieut. Col. William H. Lewis, Nineteenth Infantry, and two privates of the Fourth Cavalry were wounded. Lieutenant-Colonel Lewis was shot through the middle third of the right thigh, the ball completely severing the femoral artery. He died about twenty-seven hours after the reception of the injury, having been transported to within fifteen miles of Fort Wallace, Kans., and about thirty miles from the place where he was wounded.

8. On the night of January 9, 1879, about 150 Cheyenne Indian prisoners, confined at Fort Robinson, Nebr., after killing or wounding their sentries, made their escape from the barracks, and succeeded in reach-

ffs, two miles distant. A detachment of the Third Cavalry, ntonment about a mile distant, was sent in pursuit of the d, after a series of skirmishes, the remaining Cheyennes were on January 22, in a "washout," in which all the rest were ptured. Asst. Surg. E. B. Moseley, who forwarded to this teresting and detailed account of the outbreak, reports the asualties: During the night of January 9 to January 10, at vult of the Indians at Fort Robinson, one corporal and nine the Third Cavalry were wounded; two of the privates died w hours; a third lived until 9.30 p. m. on January 11. uary 11, during the pursuit of the fleeing Indians, twenty Fort Robinson, a corporal of the Third Cavalry was killed ate and a farrier were wounded; the private died the follow-

January 17, thirty miles from Fort Robinson, a private of Com- d Cavalry, was shot through the chest. His body fell into f the savages, and was scalped, but not otherwise mutilated. ast of these running fights occurred on January 22, forty Fort Robinson. A sergeant, a farrier, and two privates of Cavalry were killed, and two sergeants and Capt. H. W , of the Third Cavalry, and an Indian scout were wounded. g Assist. Surg. R. G. Redd reported that on April 5, 1879, Creek, Montana Territory, a private of Company E, Second d a sergeant of the Signal Corps were attacked by a party e Indians. The private was instantly killed; the sergeant l Corps received only a slight flesh-wound. g Asst. Surg. C. A. Sewall reported that in an engagement e Indians in the Miembres Mountains, New Mexico, May 29, ivate of the Ninth Cavalry was killed and two were wounded. g Asst. Surg. C. A. Sewall reports that a farrier of the Nav- as killed by Apache Indians ten miles from Ojo Caliente, May 2, 1879.

ose of the fiscal year ending June 30, 1878, 6,807 cases of in- operations that had occurred since the date of the publication of 1871, had been collected. To these have been added during al year 1,021 cases, making a total of 7,828. Twenty-three d eleven are injuries of the head, 136 of the face, 63 of the the trunk, 1,402 of the upper extremities, 913 of the lower 1,604 are simple fractures, luxations, and sprains, and 840 of a miscellaneous nature.

*Statistics of the war.*—Until June 30, 1878, 227,308 surgical 0,577 operations, giving a total of 267,885 cases, had been he permanent records of this division of the office. To these dded during the year ending June 30, 1879, 1,062 surgical 0 operations, giving an aggregate of 268,966 cases now col- 0,957 instances additional data to surgical cases were obtained of pension-examiners, from surgical journals, and from cor- with medical officers who served during the war. In 1,537 onal information was obtained from the Pension Office, and s from the Record and Pension Division.

#### ARMY MEDICAL MUSEUM.

##### *Surgical section.*

the Museum, July 1, 1878 .....	6, 874
the Museum, July 1, 1879 .....	6, 947
during the year .....	73

*Medical section.*

Specimens in the Museum, July 1, 1878 .....	1,421
Specimens in the Museum, July 1, 1879 .....	1,497
Increase during the year .....	76

*Microscopical section.*

Specimens in the Museum, July 1, 1878 .....	8,008
Specimens in the Museum, July 1, 1879 .....	8,263
Increase during the year .....	255

*Anatomical section.*

Specimens in the Museum, July 1, 1878 .....	1,948
Specimens in the Museum, July 1, 1879 .....	1,999
Increase during the year .....	51

*Section of comparative anatomy.*

Specimens in the Museum, July 1, 1878 .....	2,164
Specimens in the Museum, July 1, 1879 .....	2,241
Increase during the year .....	77

*Miscellaneous section.*

Specimens in the Museum, July 1, 1878 .....	657
Received, 510—transferred, 556 .....	46
Specimens in the Museum, July 1, 1879 .....	611

The contributors to the Army Medical Museum were 7 surgeons, 28 assistant surgeons, 13 acting assistant surgeons, 5 hospital stewards, 5 line officers, 35 civil practitioners, and 7 other civilians.

Thirty-six thousand and twenty-one visitors registered at the Army Medical Museum during the year. One hundred and seventy-eight negatives and 1,856 photographic prints of surgical subjects were made. Six hundred and twenty-six photographic prints were distributed among medical colleges and contributors to the Army Medical Museum and Library.

**MEDICAL AND SURGICAL HISTORY OF THE WAR.**

During the fiscal year the work on the second medical volume of the Medical and Surgical History of the War steadily progressed under the direction of Surgeon J. J. Woodward, the officer in charge of the work, and the stereotype plates of the text were completed during the month of March, 1879. Copious indexes were subsequently prepared, and the work having been put to press, both the issues authorized by the law have been printed, and will be laid before Congress so soon as it assembles. This volume completes Part II of the Medical and Surgical History of the War.

The medical and surgical volumes of Part III, which will complete the whole work, are both under way. The final arrangement for the printer of the materials for the third medical volume has been commenced, and most of the illustrations required are already prepared. The work on the third surgical volume is still further advanced, under the direction of Assistant Surgeon George A. Otis, U. S. A. During the year the stereotyping of 100 pages, from page 101 to page 200 (inclusive), has been completed, and 105 drawings on wood and 101 wood engravings have been made for this volume.



## PROPERTY DIVISION.

The following is a summary statement of the work performed in the Property Division of this office during the fiscal year ending June 30, 1879:

Letters received and recorded.....	4, 219
Letters sent and recorded.....	2, 071
Endorsements sent and recorded.....	494
Claims and accounts examined, settled, forwarded, or referred.....	586
Accounts current examined and forwarded to the Treasury.....	89
Vouchers and subvouchers pertaining to accounts current examined.....	2, 418
Statements of funds received and forwarded.....	272
Accounts of sales of condemned property, with vouchers, settled and forwarded.....	81
Property returns examined and settled.....	494
Property returns examined and suspended.....	40
Miscellaneous notifications and certificates issued.....	1, 430
<b>Aggregate.....</b>	<b>12, 194</b>

## LIBRARY.

About 3,000 volumes and 3,500 pamphlets have been added to the library during the past year, making the total number about 49,000 volumes, and 53,500 pamphlets.

The first part of the Index Catalogue has been sent to press, an appropriation having been granted by Congress at its last session for printing the first two volumes.

## MISCELLANEOUS.

The requirements of the Army as to medical officers during the past year have been as follows:

Number of permanent posts.....	151
Number of temporary posts and substations.....	22
<b>Total.....</b>	<b>173</b>
Number of military expeditions in the field during the year.....	32

These expeditions required the services of 41 medical officers. There were also 60 medical officers reported to this office as having been on duty with scouting parties.

The Army Medical Examining Board convened in New York City on the 7th of November, 1877, for the examination of assistant surgeons for promotion, and of candidates for appointment in the Medical Corps of the Army, has been continued in session throughout the year. Since rendering my last report six candidates for appointment have been found qualified and approved by the board, four of whom, together with the two who had been approved, but whose names had not been submitted for appointment at date of my last report, have been appointed and commissioned assistant surgeons; the names of two have not yet been submitted for appointment. The approved candidate, whose confirmation previously failed in the Senate, has been confirmed and commissioned assistant surgeon.

The following is a recapitulation of the work thus far performed by the Army Medical Examining Board:

Number of assistant surgeons examined for promotion.....	25
Number of candidates for appointment in the Medical Corps invited to appear for examination.....	130
Number of candidates found qualified.....	13
Number of candidates rejected.....	27
Number of candidates who withdrew after partial examination.....	52
<b>Total number examined.....</b>	<b>92</b>

Number of candidates who failed to appear for examination.....	13
Number of candidates who declined to appear for examination .....	8
Number of candidates remaining to be examined.....	17
<hr/>	
Total number invited but not examined .....	33
* * * * *	

At the present time there are 13 medical officers on sick leave of absence, of whom 8 have been found incapacitated for active service and have been recommended for retirement by Army retiring boards; 6 are on ordinary leave of absence, after a tour of duty on the remote frontier; leaving 154 medical officers for duty.

J. K. BARNES,  
*Surgeon-General, U. S. Army.*

The Hon. SECRETARY OF WAR.

## REPORT OF THE PAYMASTER-GENERAL.

WAR DEPARTMENT,  
PAYMASTER-GENERAL'S OFFICE,  
Washington, D. C., October 10, 1879.

SIR: I have the honor to submit my annual report of the transactions of the Pay Department for the fiscal year ending June 30, 1879.

I append tabular statements in detail showing the fiscal operations of the department for that year, concisely stated as follows:

### RECEIPTS AND DISBURSEMENTS DURING THE FISCAL YEAR ENDING JUNE 30, 1879.

Balance in hands of paymasters, July 1, 1878.....	\$1,523,739 78
Amount received from Treasury.....	12,830,738 83
Amount of Maj. G. G. Hunt, late disbursing officer Freedman's Bureau.....	101,708 37
Amount of soldiers' deposits.....	370,770 38
Amount of paymasters' collections.....	486,238 67

Total to be accounted for.....	15,318,196 03
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### Accounted for as follows:

<b>Disbursements:</b>	
To Regular Army.....	\$12,000,250 94
To Military Academy.....	206,872 79
To volunteers, claims of freedmen, &c., on Treasury certificates.....	325,728 63
<hr/>	
Total disbursements.....	12,532,852 41
Surplus funds deposited in Treasury.....	439,799 94
Paymasters' collections deposited in Treasury.....	486,238 67
Balance in hands of paymasters June 30, 1879, to be accounted for in next report.....	1,859,305 06

Total accounted for.....	15,318,196 03
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I have again to recommend legislation to rescind so much of the second section of the act of July 24, 1876, as forbids payment of mileage for travel "on any railroad on which troops of the United States are entitled to be transported free of charge." I would respectfully submit that an officer traveling without troops is not in any position to execute or carry out any policy towards these railroads. This can only be efficiently done by the Quartermaster's Department, in providing for the transportation of troops. Mileage is a substitute for payment of actual expenses to an officer traveling, without troops, under orders. The

letter system reimbursed to an officer more than the bare railroad or stage fare, and gave him, under certain limitations, repayment of hotel expenses. Thus when mileage is denied to officers traveling over certain roads, more is accomplished, by this mulcting of the officer, than to cause the roads "to transport the troops and property of the United States free of all cost, charge or expense to the United States." Also the officer to make use of the privilege of free transportation over such road must obtain transportation orders in advance from the quartermaster. This could avail him if his travel was only over that road; but in purchasing in advance through-tickets over long routes (having free roads on portions of the line) the railroad offices will allow nothing for such transportation orders. Thus the officer in practice not only forfeits mileage over such road, but cannot really avail himself of free passage over it. I present these points of hardship, notwithstanding the reduction, by a recent decision of the Second Comptroller, of the number of such roads to nine, as announced in General Orders No. 58, of 1879. The anomaly remains on the statute-book and should be repealed.

In renewing my recommendation for the enactment by Congress of the *annuity scheme*, it is natural to recur to the number of officers who have been killed in battle with the Indians during the last twelve months, and to the language of your annual report of November 19, 1877, which said "the deaths of officers on the frontier in recent campaigns against the hostile Indians bring forcibly before us the necessity of encouraging and enabling officers, by their own regular and voluntary assessment, to provide an annuity for those who are dependent upon them for support."

A former member of Congress (not a member of the present Congress) once said to me, "If this scheme becomes a law, on the eve of a great war a large number of officers will join, which, after very numerous casualties in battle, will bring heavy payments on the Treasury." I replied, "The more the better. That is just what we would wish. For, 1st, the larger the number who join, the more surely the statistics will, in the long run, be made good, and the government be secure from loss; and, 2d, it is for a state of war we especially recommend this scheme, when the widow and the orphans would have been, to some extent, provided for by the forethought of the officer."

Major-General Hancock in a report of October 19, 1876, strongly advocates the annuity scheme, and quotes the very pertinent recommendations of Lewis Cass, when Secretary of War, in his annual report of November 29, 1833, and of Joel R. Poinsett in 1837. The former said:

A moderate and stated deduction from the pay of each officer would create a fund which would afford essential relief to many who otherwise would be exposed to want and penury, and might soothe the declining years of meritorious officers, who may have necessarily expended in the maintenance of their families the whole allowance made to them by law, and who, without such an arrangement, would look forward with anxiety to the future.

Mr. Poinsett said:

I beg leave to reiterate that which proposes some legal organization for the purpose of establishing a fund for the support of invalid officers, and the widow and children of such of them as may die in the service. This may be done by making a moderate reduction from their pay to such an amount and in such manner as may be agreed upon by the officers themselves.

There appears to be a large number of the most experienced officers in favor of an increase of the pay of the sergeant-majors and quartermaster-sergeants of regiments, and of first sergeants of companies. In my annual report of October, 1876, I concurred in recommending such increase, proposed in a bill, H. R. 2936, of that Congress. Since that date,

experienced colonels, such as Col. H. J. Hunt, of Fifth Artillery, and Col. O. B. Willcox, of Twelfth Infantry, have made such recommendations. The latter goes so far as to urge \$50 per month for sergeant-majors and quartermaster-sergeants, and \$45 per month to first sergeants.\*

Colonel Willcox now commands the Department of Arizona, and his case forces on me the conviction that the President should, by legislation, be given the power to direct, in special cases whenever he thinks proper, payment of an officer according to his brevet rank. This would be particularly proper for an officer commanding a department or an army in the field. The law now forbids any payment for brevet rank.

The legislation of 1869 concerning brevets is very wise, and should have been adopted a half century ago. It limits the power to confer commissions by brevet to "time of war and for distinguished conduct and public service in the presence of the enemy"; and the special assignment by the President is necessary to entitle an officer to command under said brevet. All governments should have the power to reward and stimulate distinguished conduct in the field, and if, on special occasions, the brevet shall also bring pay, the honor conferred would be the more signal and substantial.

The number of deposits made by enlisted men, under the act of May 15, 1872 (sec. 1305, R. S.), during the last fiscal year was 6,807, amounting to \$370,770.38; during the previous year the number was 5,524. This is a considerable increase in the number, but the average of the amount of each deposit is less.

The following is a tabular statement of amount deposited and amount repaid during the last seven fiscal years:

	DEPOSITED.			REPAID.		
	Number of deposits.	Amount of deposits.	Average of deposits.	Number of deposits repaid.	Amount of deposits repaid.	Amount of interest paid.
Fiscal year ending June 30, 1873.....	2,217	\$209,850 38	\$94 65	52	\$6,688 59	\$71 00
Fiscal year ending June 30, 1874.....	4,971	346,609 56	69 72	611	55,316 25	1,695 15
Fiscal year ending June 30, 1875.....	5,105	325,255 80	63 71	3,880	292,668 94	13,289 84
Fiscal year ending June 30, 1876.....	*14,252	435,912 68	30 58	7,406	320,856 01	15,509 44
Fiscal year ending June 30, 1877.....	5,651	328,585 05	58 15	8,440	358,559 95	20,466 93
Fiscal year ending June 30, 1878.....	5,524	346,243 94	62 68	3,182	145,667 91	8,420 24
Fiscal year ending June 30, 1879.....	6,807	370,770 38	54 47	4,926	257,854 48	17,706 93
Totals.....	44,527	2,363,227 79	53 74	28,497	1,443,012 13	77,159 53

\* This large number of deposits in the fiscal year ending June 30, 1876, was exceptional, and due to the non-appropriation for half of June in that year.

The number of desertions in the Army during the last fiscal year was 1,965; in the previous year 1,672. This increase we will hope is temporary. The number in the cavalry was 662 against 776 during the previous year; the number in the infantry was 937 against 608 in the previous year, showing an unaccountable increase of the number of desertions in that branch of the service.

#### BOUNTIES, ETC., DUE COLORED SOLDIERS.

The second section of the sundry civil appropriation act of March 3, 1879 (published in General Orders No. 42, of 1879), provided—

That all sums due upon certificates issued or which may be issued by the accounting officers of the Treasury in settlement of claims for pay, bounty, prize-money, or

\* Brevet Maj. Gen. W. Merritt, colonel of Fifth Cavalry, in October number of the *United Service Magazine*, recommends "seventy-five dollars a month for non-commissioned staff officers and first sergeants of companies," and duty sergeants from forty to fifty dollars a month.

other moneys due to colored soldiers, sailors, or marines, or their legal representatives, shall be paid by the officers of the Pay Department of the Army, under the direction of the Paymaster-General, who is already charged with the payment of like dues to white soldiers.

By the act of June 10, 1872 (Statutes 17, p. 336), the Bureau of Refugees, Freedmen and Abandoned Lands was discontinued from the 30th June, 1872, and "all acts or parts of acts pertaining to the collection and payment of bounties or other moneys due to colored soldiers, sailors, or marines, or their heirs," were thereafter to be carried into effect by the Secretary of War. Under this act, said duty, by the direction of the War Department, was devolved upon what was called "the Freedman's Branch of the Adjutant-General's Office."

Under the act of March 3, 1879, I designated, under instructions to him dated March 8, 1879, Major A. B. Carey, paymaster, to take charge of said duties in this department. He had already for some time been charged with the payment of like dues to white soldiers paid on Treasury certificates. The records, papers, &c., were transferred by May 5, 1879, to Maj. Carey, by Maj. G. G. Hunt, chief disbursing officer, Freedman's Branch of Adjutant-General's Office, and \$100,708.37, funds for payment of said claims.

The great object sought has been the payment of the moneys due (not a mere check) to the identical colored soldier or his heirs, for experience had shown that they were peculiarly liable to imposition and fraud. Hence the original legislation on this subject (vol. 15, p. 26, of Statutes) in the joint resolution of March 29, 1867. All the precautions enjoined in that act are still in force; and the recent act of March 3, 1879, recognizes the method of "postage and post-office money-orders," which had been previously practiced by authority of the Secretary of War. The Post-Office Department has carefully and efficiently co-operated with this office in the discharge of this duty.

Respectfully submitted.

BENJ. ALVORD,  
*Paymaster-General, U. S. A.*

To the Hon. the SECRETARY OF WAR.

## REPORT OF THE CHIEF OF ORDNANCE.

WAR DEPARTMENT, ORDNANCE OFFICE,  
*Washington, October 20, 1879.*

The Hon. SECRETARY OF WAR:

SIR: I have the honor to submit the following report of the principal operations of the Ordnance Department during the fiscal year ended June 30, 1879, with such remarks and recommendations as the interests of this branch of the military service seem to require.

Under the various laws of the United States, the Ordnance Department provides arms and munitions of war for the whole military establishment, and has charge of the armories, arsenals, and other ordnance establishments for their manufacture, repairs, and storage. Thus at the present time the department is providing ordnance and ordnance stores for the sea-coast fortifications, the whole body of the militia, the Military Academy, and the Artillery School, and the Regular Army, in the military establishment, and to the Treasury, Post-Office, and Interior De-



partments, and the Fish Commission, the Marine Corps, and the thirty colleges authorized by section 1225 Revised Statutes. In addition to this work it is charged with other important duties in connection therewith not now necessary to enumerate.

The fiscal resources and expenditures of the department during the year were as follows, viz:

Amount in the Treasury to the credit of appropriations on June 30, 1878 .....	\$100,402 96
Amount in the Treasury not reported to the credit of appropriations on June 30, 1878 .....	19,034 95
Amount in government depositories to the credit of disbursing officers and others on June 30, 1878 .....	161,134 72
Amount of appropriations for the service of the fiscal year ended June 30, 1879 .....	1,410,054 41
Amount refunded to ordnance appropriations in settling accounts during the fiscal year ended June 30, 1879 .....	27,394 40
Gross amount received during the fiscal year ended June 30, 1879, from sales to officers; from rents; from collections from troops on account of losses of, or damage to, ordnance stores; from Chicago, Rock Island, and Pacific Railroad Company; from exchange of powder; from sales of condemned stores; and from all other sources not before mentioned .....	74,638 30
Total .....	<u>1,792,659 74</u>
Amount of expenditures during the fiscal year ended June 30, 1879, including expenses attending sales of condemned stores, exchange of powder, &c. ....	\$1,443,996 74
Amount deposited in the Treasury during the fiscal year ended June 30, 1879, as proceeds of sales of government property .....	9,144 71
Amount lapsed in the Treasury from the appropriation "Ordnance material," under act of March 3, 1875, during the fiscal year ended June 30, 1879 .....	203 00
Amount transferred from ordnance appropriations in settling accounts during the fiscal year ended June 30, 1879 .....	394 09
Amount turned in to the "surplus fund" on June 30, 1878, and June 30, 1879 .....	33,149 87
Amount in government depositories to the credit of disbursing officers and others on June 30, 1879 .....	77,845 25
Amount in the Treasury not reported to the credit of appropriations on June 30, 1879 .....	3,075 63
Amount in the Treasury to the credit of appropriations on June 30, 1879 .....	224,848 45
Total .....	<u>1,792,659 74</u>

#### STATIONS AND DUTIES.

With few exceptions, the stations and duties of the officers remain the same as reported last year, viz: Two at the Ordnance Office; thirty-four at the arsenals, armory, and powder depots; eight at the ordnance agency, on the Ordnance Board and at the foundries; seven at the different military headquarters and ordnance depots; four at the Military Academy; two under the orders of the honorable Secretary of the Interior, and two on leave of absence (sick). Captains C. E. Dutton and Pitman have, on application of the Secretary of the Interior, been detailed for duty in that department, and Lieutenant Lyle still continues on duty in the Life-Saving Service under the Secretary of the Treasury. Under the operations of existing laws, four officers have been transferred to the department from the line of the Army, after passing satisfactory examinations preliminary thereto.

During the past year death has taken one of our most meritorious officers—Lieutenant-Colonel Treadwell. To abilities of no common order,



and to services highly distinguished, he added a pure record and a kindly nature, and his loss is deplored by the entire department.

All of the officers of the department have been busily engaged on the important duties devolved upon them by law, and the results of some of their labors are shown in the many interesting and valuable papers appended.

I append a roster of the corps, with the stations and duties of each officer.

#### ARSENALS, ARMORIES, AND DEPOTS.

The various duties at our ordnance establishments have been performed in a most satisfactory way, and the moneys appropriated for repairs and improvements have, it is believed, been expended in an economical and judicious manner, yet in most instances the money available has been of so small an amount as to preclude anything but the most minor work. I have estimated for the next fiscal year for sums which I consider should be granted to enable me to properly preserve and protect the large public property under the control of the department.

By a reference to the report of the operations carried on at the Rock Island Arsenal it will be seen that the construction of the new buildings has progressed in a satisfactory manner, and with the aid of the new appropriations asked for, the workshops will soon be in a condition to receive their machinery and commence manufacturing to meet the future wants of the country.

The ordnance depots have met the expectations of this office, and have proven to be of great convenience in speedily supplying the troops serving in the field against the hostile Indians. Ample supplies have been collected and placed under the immediate control of the military commanders interested, and by them have been distributed to their commands as occasion has demanded.

An officer of the department is now engaged in examining the various sites offered for the establishment of the new powder depot on the Atlantic coast, and it is presumed that he will soon be able to recommend a suitable location, when steps will be taken to secure sufficient land for the erection of the proper magazines and other buildings for the storage and handling of powder.

I beg to ask the especial attention of the Secretary of War to my estimate for continuing the boring of the artesian well at the Benicia Arsenal to a depth sufficient to determine whether a good supply of palatable water can be procured. The well has now reached a depth of 1,407 feet, and it is thought proper to carry it down 600 feet more. A perusal of the interesting report of the commanding officer of that arsenal (Appendix L) will show what difficulties have been encountered and overcome so far, and what may be expected in the future progress of the work. The many artesian wells on the Pacific coast have been of a depth only sufficient to reach surface water, which is neither constant in quantity nor sufficient in supply. Whether at a depth such as has been reached in other quarters of the globe a full, constant supply can be obtained, is a matter that deeply concerns the manufacturing and agricultural interests of the Pacific coast, and I trust that it will be deemed of sufficient importance to strongly recommend to Congress the desirability of a proper appropriation to demonstrate its success or failure.

A recent official visit to the Benicia Arsenal has impressed me most forcibly with the wants of that national establishment, and the pressing necessity of enlarging and perfecting its manufacturing and storing facili-

ties. Under the careful, economical, and intelligent command of Lieutenant-Colonel McAllister the arsenal has been established on a satisfactory basis, reflecting great credit on his executive and administrative capacity and professional attainments. The constantly increasing wants of the Pacific coast demand the fostering care on the part of Congress of this, the only manufacturing establishment owned by the United States in that region. I earnestly recommend liberal appropriations for that arsenal.

I have renewed my estimate for an appropriation to purchase a small tract of land adjoining the San Antonio Arsenal. It is absolutely indispensable for the security of the arsenal buildings and the public property stored therein that the government should own this property. Its proximity to the frontier may some day require an increase to its capacity, and this additional ground will be absolutely necessary. Its purchase has been often recommended, and the recommendation has always received a favorable hearing in the Congress, but so far, from some cause, the necessary funds have not been appropriated. Executive Document No. 48, House of Representatives, Forty-second Congress, third session, fully explains the necessity of its early acquirement.

Since my last report, the erection of a building at the proving ground at Sandy Hook, N. J., has been nearly completed, and it is now occupied for the purpose intended, giving good accommodations for the officers and others interested in the important labors at all times in progress. During the present fiscal year the quarters authorized for the superintendent of the grounds will be completed, and the work of grading and leveling the grounds, so far as the limited appropriation will permit, will be carried on. To make the proving ground what it should be requires additional facilities for the storage of powder and other ordnance property, and for the accommodation of the force of mechanics and laborers at all times employed there, and to meet those requirements I have asked for certain sums of money to be expended during the next fiscal year, the detailed necessity for which is set forth in the Book of Estimates, and to which I beg to refer.

#### ARMAMENT OF PORTIFICATIONS.

An estimate of \$950,000 for this purpose has been submitted for the next fiscal year. The limited appropriations for the year 1878-'79 for sea-coast armament have been mainly used in the conversion of 10-inch smooth-bores into 8-inch rifles, and the provision of carriages for the same, and existing contracts are now rapidly approaching completion.

In my report of 1878, I stated that—

There are but two manufacturing establishments in the country having the facilities and experience necessary for the conversion of guns on the plan adopted. These are the West Point Foundry, Cold Spring, New York, and the South Boston Foundry, Massachusetts, both of which have done foundry work for the government since the commencement of the century. As in all probability we will have to depend on these establishments in the future, the department ought to be in condition to keep them in sufficient orders to preserve the plant and mechanical skill without loss to the companies.

And added—

Irrespective, however, of any consideration of persons or profit the present urgent wants of our forts for armament, and the impossibility of supplying it except by a slow and careful process incompatible with the rush of events in impending war, the economy of working at present prices, besides giving the idle mechanic the privilege of laboring for his bread, all appeal to Congress for a large permanent annual appropriation for this national necessity.

My convictions as to the soundness of the policy of extending governmental support to, and thereby actually keeping in existence, the only establishments in the country organized and fitted to fabricate heavy ordnance, are deepened by a fuller consciousness of how inadequately we are provided in this respect for even common emergencies. This, taken in connection with the fact that our present sea-coast armaments (principally composed of smooth-bores) are almost useless for coping with the heavy artillery of the present, leads me again to urgently recommend that Congress be asked to consider the granting of liberal appropriations for our national defenses, as a matter of the first importance.

The alterations of casemate carriages for 8-inch converted rifles have progressed satisfactorily during the past year, the product enabling us to provide for the guns which have been so far converted, and now available for mounting by the department. In consequence, seventy-five 8-inch rifles ordered for distribution now occupy their emplacements in the forts, or will shortly be in their positions; and, although the number is small and the guns of inadequate power for the more important positions (now occupied principally by smooth-bore guns), yet they provide powerful batteries for our existing casemates of contracted dimensions, and hence the conversion of 10-inch smooth-bores should be continued as rapidly as funds for the purpose are provided.

In this connection, however, it is to be remarked that the provision of guns of much higher powers is a first necessity, and that the expenditures of moneys looking to the provision of the latter should, if practicable, take precedence in the use of funds over all other constructions.

In consequence of these views, the conversion of a 15-inch smooth-bore into an 11-inch rifle—referred to in my report of last year—was undertaken, and the gun is now on the grounds at Sandy Hook undergoing its proof. It has been fired up to date only 33 rounds, and with charges varying from 70 to 85 pounds, and shot weighing from 503 to 506 pounds. The trials are too few, of course, to draw any inferences as to its ultimate endurance; but it may be stated that the gun appears, so far, to be sound in all respects. Its test will be pushed forward to a completion as rapidly as the circumstances attending the proof will admit.

The want of means, and the introducing of some changes in the traverse gear of the chassis of the carriage of the 12-inch rifle, have led to a suspension of the trials with this gun.

The 10-inch rifle, also, has only been fired a few rounds since the last report, it being thought more important to apply our available means to the test of the 11-inch construction; also to retain it, for the present, for use in the important duty of testing different experimental powders and projectiles.

The important tests of the 8-inch breech-loading rifle, converted from a 10-inch smooth-bore gun, and mentioned as completed and under proof, in my last report, are still in progress, and up to date 202 rounds (190 with full battering charges) have been successfully completed. The endurance so far has proved satisfactory, and no evidences of want of endurance in its special construction have been so far afforded; and we have good grounds for the opinion that it will stand its thorough proof, and establish the fact that we can convert, after this system, our original smooth-bore cast-iron guns into breech-loaders, or produce original breech-loading cannon of the heaviest construction, using in a short time wholly the products of our *own* foundries and other manufacturing establishments.



In my report of 1876 I alluded to the decided advantages to be derived from the use of breech-loading rifles, especially in casemated works. Since then the unfortunate disaster on board of the "Thunderer" (the bursting of a 38-ton M. L. gun by the accidental insertion of two charges—impossible to occur in breech-loaders) and the unexcelled results (in power, accuracy, and successful manipulation) recently attained at Meppen by Herr Krupp in the trials of his breech-loading guns of 70 and 18 tons, have led to the conviction that it is highly probable that the general introduction of breech-loading instead of muzzle-loading cannon in the armaments of Europe—for all heavy ordnance especially—is a mere matter of time. In fact, the high charges now employed—requiring long and large chambers, and, as a sequence to their use, great lengths of bores, so increases the cumbersomeness and inconveniences of the loading apparatus required for muzzle-loaders (besides resulting in exposure to *personnel* and *materiel*) that it is believed it will be decidedly difficult, if not almost impracticable, to operate muzzle-loaders constructed after the *more recent models* with desirable convenience and safety.

These facts have not been lost on the department, and plans are now in its possession looking to the prompt application of the principles of chambering and breech-loading to our present guns, and to new constructions, whenever favorable action on the part of Congress will enable us to undertake the introduction into our service of these recent and most important and decided improvements.

*Chambered rifles.*—The decided advantages resulting from the introduction of chambers, with increased lengths of bores, for the employment of heavy charges, have been demonstrated by testing a 3-inch rifle chambered and lengthened.

This gun was selected, as it enabled the department, in a prompt and inexpensive manner, to test these novel features. The results, as shown by the record, were highly satisfactory, and equaling those obtained abroad. An initial velocity of 2,025 feet was reached by the use of 5 pounds 13 ounces of powder with 10.5 pound projectile, the pressures only being 30,000 pounds per square inch.

The highest velocity yet attained with the ordinary 3-inch rifle is, with the highest charge practicable, 3 pounds of powder with 10.5 pound projectile, 1,558 feet, with a pressure of 36,333 pounds per square inch.

The importance of changing our rifling to a more rapid twist, if found by experiments to be practicable, has been recognized for some time by the department, and a 3-inch rifle with a shorter twist than found in the service gun has been prepared and is now under trial with varying weights and lengths of projectiles.

It is believed that the results will be valuable in practically demonstrating the increased capacity and power from the use of a shorter twist, and that they will show the advisability of using a more rapid twist in our heavy calibers.

*Breech-loading field rifle.*—A wrought-iron field gun was, on plans recommended by Lieutenant-Colonel Crispin, constructor of ordnance, converted, at small expense, into a breech-loading rifle. The results of its trial have been very satisfactory, and the Ordnance Board recommends that a battery of these be made for issue to the service for competitive trials with the muzzle-loaders. As this experiment can be made at trifling expense by converting guns on hand, and enable us to get an expression of opinion from artillery officers as to the relative merits of muzzle and breech-loaders for service, the recommendation, if it

meets your approval, will be carried out at the earliest practicable moment.

*Powder tests.*—During the past year tests have been made of a variety of samples of experimental powders for the 11-inch, 8-inch, 4.5-inch, and 3-inch rifles, and the results obtained are summarized and appended to the firing records of those several guns.

These experiments, though not yet completed, undoubtedly indicate progress in the right direction; and it is confidently believed that ere long we will be enabled to procure powders which will give in these several guns about the initial velocity desired, with moderate and safe pressures. In this connection, it may be said that great credit is due Messrs. Du Pont & Co. for the intelligent manner in which they have interpreted the results of the experiments and promptly met the wants of the department in furnishing samples.

*Experimental guns.*—Under the act of Congress approved June 6, 1872, appropriating funds for the procurement and tests of experimental rifled ordnance of heavy calibers (to be selected by a board of officers of the United States Army to be appointed by the honorable Secretary of War), the department, under the authority of law, has procured, amongst others, several guns which are now on hand at the proving-ground at Sandy Hook awaiting trial. These guns are the Woodbridge 10-inch rifle, the Thompson 12-inch breech-loading rifle, the Sutcliffe 9-inch breech-loading rifle, the Lyman multicharge gun, and the Mann 8-inch breech-loading rifle.

The Woodbridge gun has been fired ten rounds; the Thompson two rounds; the Sutcliffe twenty-six rounds; the Mann eleven rounds, and the Multicharge gun three rounds.

The extent of the tests so far made are meager in the extreme, and no evidence of any special importance of the merits of any one of these experimental guns has consequently been obtained. They have been in the possession of the department, awaiting trial, for three or four years, but want of funds to undertake what may be regarded as a suitable proof has prevented the prosecution of the work. They were selected by a board of officers after careful investigation as to their presumed merits as systems of construction (both breech and muzzle-loaders), and have been procured at considerable expense to the government.

In view of the facts that they were provided for experiments and tests, and that none have so far been made to any extent, and, in view of the developments to be expected regarding the numerous questions involved in gun constructions, both muzzle-loading and breech-loading, the interesting and important developments to be made in the furtherance of the solution of the ballistics questions now occupying the attention of the civilized world, and improvements to be developed in powders, projectiles, and systems of rifling, &c., some measures looking to the trial of these guns, and as contemplated by law of June 6, 1872, and to fully test these different inventions (recommended by the board organized under the act), should be instituted by the department. I have accordingly estimated for \$117,600, which, if appropriated, will enable me to have the merits of these different systems fully determined.

*Machine guns.*—The only tests under this head during the current year have been those incident to the trial of a flank defense carriage adapted for the service of the flank defense Hotchkiss revolving cannon.

The necessity of a practical carriage for use with this gun was apparent to the department, and a carriage devised by the constructor of ordnance has been tested with satisfactory results, and recommended for adoption by the Ordnance Board.

## MILITIA.

Under the Constitution, "Congress shall have power"—

To provide for calling forth the militia to execute the laws of the Union, suppress insurrections and repel invasions.

To provide for organizing, arming, and disciplining the militia, and for governing such part of them as may be employed in the service of the United States, reserving to the States, respectively, the appointment of the officers, and the authority of training the militia according to the discipline prescribed by Congress.

To make all laws which shall be necessary and proper for carrying into execution the foregoing powers, and all other powers vested by this Constitution in the Government of the United States, or in any department or officer thereof.

No State shall, without the consent of Congress, \* \* \* keep troops, or ships of war in time of peace, \* \* \* or engage in war, unless actually invaded, or in such imminent danger as will not admit of delay.

For many years there has been a growing feeling throughout the country in favor of a reorganization of our militia system. To perfect our present organization, or to improve it by alteration, requires the action of Congress. That Congress has full power to provide for *organizing* the militia in time of peace, under the above-quoted provisions of the Constitution, there can be no doubt, and Congress has exercised this power in the obsolete and meager laws now on our statute-books; but there has been no practical means provided for enforcing obedience to these laws. Everything is left to the discretion of the individual States. A few of the States have small but well-regulated bodies of troops, while others have none, or, if any, undisciplined, ununiformed and indifferently equipped. It seems to me that the time has come when the subject of raising, arming, and equipping, disciplining, and keeping in readiness for service a part of our militia, should receive the thoughtful attention of Congress.

That a portion of the militia should in a sense be mobilized requires no argument, and this active portion should be distributed equally throughout the country according to population.

By establishing the principle by legal enactment, that Congress will help only those who help themselves, and providing that arms and equipments will not be issued to a State except in proportion to its properly enrolled and organized active militia, and that a per diem for camp services shall be paid to those individuals only who are present in camp, and only for the days that they are present and actually employed, the States and people may be brought to a realizing sense of the necessity for prompt and permanent action in a matter so vital to the military power of the nation. The general government, under the law of 1808, now supplies arms and equipments to the militia of the States, and there is no reason why their issue should not be made dependent on acts to be performed by the States, such as the organization and discipline of a certain portion of the militia.

I have, therefore, to recommend that provision be made by law for organizing, arming, and disciplining a militia force of two hundred thousand men, distributed among the States in the proportion of about seven hundred men to each Congressional district and Territory, and the District of Columbia.

To make this practicable will require large annual appropriations, appropriations that must be permanent, at least for a few years, to give a trial to the scheme.

*In the first place*, there should be an annual appropriation of \$1,000,000 for arms and equipments, which would give about \$3,000 for the troops in each Congressional district. The necessity for this increase of the annual appropriation for arming and equipping the militia is so well



and appreciated, has been so often referred to at length in reports from this office and the War Department, that no lengthly is called for.

regate strength of the militia of the United States, as taken from the Army Register, is as follows:

.....	113, 873
.....	3, 822, 114

\$200,000 is annually appropriated for their arms and equipment. With our small standing army, the country must recruit its fighting men from the people on the instant upon the breaking out of war. Men who fought our recent battles will soon pass from the scene, too old for active service, and most of the experience of the war is lost to the country, with the actors in their graves. Half a century has passed away since the close of that mighty struggle. In the years of dependence will have to be placed on the raw recruit; the experience of the bivouac and battle cannot be acquired in the quiet avocations of ordinary life, much can be effected in the hands of the young men the arms they may have to use in encouraging that military spirit which alone can make men soldiers. The distribution of arms to the militia is a vital part of this regard, and the want of a large standing army must be assuaged by a well-organized, well-armed, and well-disciplined

*second place*, there should be an annual appropriation of \$1,000,000 for the expenses of an annual encampment—the payment to the militiaman a per diem for each day's service while actually in camp.

In this manner the benefits to be derived from this appropriation should be strictly confined to those States and to those individuals who are actually engaged in the service of the general government.

Our statute-books need a thorough revision, after a most careful consideration of all the various elements that enter into the subject. The supervision and control to be exercised by the government must be fully and definitely set forth, as definitely for a time of peace as for a time of war, and this degree of discipline once determined should be fixed by such enactments as will produce the most beneficial results to the United States, the States, and the militiamen. All are interested in this, in different degrees, perhaps none more so than the citizen, who may, at a moment's notice, be called upon to assume the functions of a soldier. I may be pardoned for saying, in a few general remarks, what I consider primarily necessitates legislation.

A permanent annual appropriation of one million dollars for the purpose of equipping the militia, organized as proposed.

A permanent annual appropriation of four million dollars for a per diem of one dollar per man per day, for every day he is present and engaged in the encampment. The encampment to continue twenty days each year.

The militia should be armed and provided with the same munitions as is the Regular Army, so far as the stores furnished by the Government and the States are concerned. The necessity of this is obvious to all, and more so than to the veterans of the late war on both sides. It should be understood by the States and the militiamen that the arms and munitions furnished to them do not cease to be the property of the Government and the States, and they should be properly accounted for to the Ordnance U. S. Army in a manner similar to that in vogue in the

Regular Army; and, being the property of the United States, the general government should make the necessary repairs, and should withdraw them when worn out or obsolete, supplying those of later patterns, thus keeping the armament in a continual state of efficiency.

4th. There should be a well-devised system of inspection instituted and administered by the War Department, without which the efficiency of the militia establishment can never be known nor ever be improved. To do this the most competent men should be selected as inspectors, clothed with high rank, certainly not less than that of colonel, and invested with the powers that now appertain to inspectors in the Regular Army. They should be sufficient in numbers to make an annual inspection of the militia of each State and Territory, reporting, in detail, the result to the Secretary of War, and a copy thereof to the governor of the State or Territory interested. Some of these inspectors should be taken from the Regular Army, but the majority from the competent officers of the late war who served on either side, and this corps of inspectors might well be clothed with power, under the Secretary of War, to make such general regulations as are necessary to an uniform dress, drill, and discipline throughout the whole body of our citizen soldiery.

5th. Each State should be obliged to maintain one or more suitable rifle-ranges, and perhaps to offer suitable prizes to incite a proper emulation in target practice, and there should be an officer of high rank in the militia of each State or Territory who should be in charge of such practice.

6th. When the exigencies of the regular service will permit, officers of the Regular Army should be allowed to accept commissions in the militia, without detriment to their regular commissions, upon the application of the governors, and for such times as may be determined upon.

7th. One of the most valuable means of increasing the efficiency of the militia is by the dissemination of knowledge through a military education of the youth of the country. To a certain extent this has been provided for by United States laws; but the laws, as they stand, can be improved, and a system which is undoubtedly good, so far as it goes, be made one that in a few years will furnish a large number of well-educated soldiers, capable of entering upon commands and successfully administering them.

Section 1225 Revised Statutes, as amended by act of July 5, 1876, authorizes the issue of arms, artillery, &c., to colleges where an officer of the Regular Army has been detailed, the number not to exceed thirty, &c. This law calls for material modifications. There should be more permanency in the detail and in the institution that is to receive these benefits. A college that is to be provided with an officer and arms should be specially designated by the legislature of the State interested, and service at a college ought not to be optional, but be considered a military duty to which all officers are liable. Governmental supervision and inspection of these colleges as regards military training, discipline, and study, should be a condition attached to the acceptance of the liberality of the general government. The providing of officers and arms makes these colleges, in a sense, a portion, and a very important portion, of the military establishment, because of the direct influence they must exercise over the efficiency of the militia, supplying, as they will from year to year, a number of competent instructors in all that is necessary to make men good soldiers.

By liberal appropriations and some such provisions of law, strictly enjoined and enforced, an active militia of 200,000 men could be kept in hand as a reserve force ready for any emergency, either domestic or for-

while taking them from their daily avocations for a very limited time during their annual encampment, the daily allowance, though small, would partially compensate them for loss and time. It would give force, supplementing our small Regular Army, always at call, to every portion of the country and every characteristic nationality. It would instil a military spirit throughout the country and keep alive the traditions of the past.

*Reserve.*—The proper organization for an armed force in time of peace is its organization for war. A simple expansion can be readily effected on the eve of a conflict, but a novel organization at such an epoch would be with disaster. Our experience as a nation clearly shows that, in time of peace, the militia but on our volunteers has the country depended in case of war. Would it not be wise in any legislation for the establishment of a national reserve force to which reference is made, to break loose from the organization of the past, and empower the President in time of peace to organize a *National Reserve*, under the constitutional power “to raise and regulate Militia,” on the plan indicated above? Should not State rights yield to the necessities that our wars have proved to be? It would be only extending into a national condition what is now fully practised in some of the States, where uniformed volunteer organizations take the place of the ordinary militia. While admitting the subject is environed by conflicting views of constitutional rights, and by the powerful influences of sectional and individual interests, I am satisfied that the laws could be so framed as to guard the national and State rights from Executive encroachments. The militia should be localized in proportion to population, camped out for a certain period annually in their respective localities, and be paid from the public treasury. In the interest of the public good and the efficiency of the subject deserves the careful consideration of Congress. An act approved March 3, 1875, provides that, under certain conditions, arms are to be given to the several States and Territories for the use of the militia, and they are to be respectively for arms, &c., which were issued to the States between January 1, 1861, and April 9, 1865, and charged against the States under the law for arming and equipping the militia. It is the duty of the Secretary of War to refuse a credit “if he shall find that any of said arms or ordnance stores have been sold,” &c. At the close of the war some of the States, through inadvertence, or a wrong interpretation of the laws relating thereto, sold portions of the arms, &c., at a low price, realizing but a portion of the values charged against the books of this office. The arms ought not, in my opinion, to be charged to the States on their quotas, but should have been retained for as issues to the Army, and the loss of values should have been borne by the United States. In my opinion these charges against individual States ought to be removed, and that the spirit of the law should be extended, so as to permit credits to be given to the States for the difference between the prices charged and the prices realized from sale. I would recommend a modification of the act of March 3, 1875, in the following particulars:

#### SMALL-ARMS.

At the close of the last fiscal year there were manufactured at the National Armory, Springfield, 105,000 rifles, and under the law authorizing it, 1,000 of the new Remington-Union Metallic Hotchkiss magazine rifles. The former have been produced at a much less cost than heretofore, owing to the increased number of rifles manufactured and the improvement of the plant employed, and as a result a larger appropriation than usual for the present

year, it is confidently expected that the cost will yet be further reduced in the future. We had in store on July 1, 1879, only 22,073 rifles and 5,406 carbines at the armory and arsenals, a wretchedly small number considering the wants of the present and the calls that may be made in the future.

The Hotchkiss arms are now in the hands of the Regular Army for trial in actual service, and upon the reports to be made bi-monthly will depend any recommendations for the supply to be hereafter manufactured. But whether this magazine gun is to be the arm of the future or not, it is not safe to delay providing an ample supply of the Springfield rifles, and for that purpose I have asked for the next fiscal year an appropriation of \$900,000, which amount should be given in the interests of economy and for the national defense. Last year in my annual report I had the honor to remark upon this matter as follows, viz :

The necessity for an accumulation of arms of the latest pattern has been so often discussed, has received such practical application on the part of other countries, that a further reference to it in this report would be a work of supererogation. The moral effect of a large supply of arms in readiness for use is always entirely disregarded in the discussion of the subject. To be prepared for immediate hostilities is a quiet power, which must enter largely as an important factor in the determination of international questions that may or may not lead to war, and, as such power, it is worth all the money expended in its production. The argument so frequently used, that the gun of to-day will probably be superseded by a superior invention a few years hence, and the expense of to-day be money thrown away, might be used with equal force and pertinence respecting any article of manufacture whatever. But the present approved arm cannot be rendered worthless by the introduction of an improved weapon, because as long as small-arms are fired from the shoulder and the propelling force is gunpowder, the caliber of gun and dimensions of cartridge, now regulation, will not be changed, and the improvement will only consist in more rapid manipulation and increased rapidity of fire. As a case exactly in point, the Board on Magazine Guns has recommended a gun for trial in the hands of troops that is an improvement on the present Springfield arm only in its ability to empty its magazine of cartridges in one-half the time that the same number of shots could be fired by the latter. Used as an ordinary breech-loader, its advantages, if any, are not material or worth consideration, and yet its use as a single breech-loader will be its normal condition, the increased rapidity of the magazine-feeding being reserved for great emergencies. Such a gun, if approved and adopted, in a few years, will not render the Springfields that may be on hand worthless. I therefore hope that Congress may be liberal in its appropriation.

And, in 1877, I said :

Believing that such a country as this, with its great natural resources, abundant wealth, an exposed frontier of many thousands of miles, with a shore-line of as many thousand more, should, as a measure of ordinary safety, have always in store not less than half a million of the best and most efficient arms, the manufacture of one-tenth that number during the next year seems so necessary as to call for no argument. It may be true that our policy is peace. If so now, it has been so for a century, and yet during that short period in the existence of the nation we have had not only countless wars with the Indian tribes, but wars with the nations contiguous to our boundary north and south, and the great war of the rebellion. Is it to be expected that a continuance of such a peace policy will, in the present century of the country's life, be more successful in keeping us free from a fair proportion of conflicts in which peace can only be maintained at the sacrifice of men and means? The experience of the most enlightened nations in the past, the gigantic struggle now being waged on the continent, that may ere its close involve other powers and subject all Europe to the horrors of war, prove how far we are yet from a realization of a peace that will last longer than time enough to prepare for a new conflict. If old-established communities, with the cumulative wisdom and experience of centuries to guide them, seem to exist only under the protection of armies, is it to be expected—with a record of our wars during the past century before us—that the United States, almost the youngest in the family of nations, can enjoy a future different from theirs? To be prepared for war is one of the most effective means of preserving peace. Such preparations, to be efficient and complete, must, however, be made at leisure, with all the skill, experience, and means of which we are capable. In making them, time is an element not to be ignored or despised. The progress in invention and of the mechanic arts must be consulted and kept in view in the work of preparation, because the approved articles of the past may have become

the mere stepping-stone to the perfected improvement of the present. What fifteen years ago was deemed a perfect musket is now classed as obsolete, with hardly a marketable value, and that marvel of mechanism of to-day, the breech-loading rifle, must soon make room for a still greater marvel in simplicity and effectiveness. In our preparations we must keep abreast of the progress of the age. Get the best of to-day, with the certainty that it must yield to the best of to-morrow. And it is this unceasing, ever-changing, still improving march that enforces constant and unremitting study, and labor, and change, and improvement on the part of governments the world over, that they may be thoroughly prepared in the day of trial, not with the obsolete appliances of a past age, but with the perfected mechanism of the present. This constant change of model and pattern involves all countries in great expense in fact, in never-ending drafts on their exchequers. But unless a grand council of the nations should decide and fix on the kind, character, and quality of the weapons that are to be used in war, there is but one unerring, unfailing guide to the character of an armament, and that is that it shall be equal, and if possible superior, to that of all others. This entails the constant expenditure of large sums; but such expenditures are more than repaid by the first victory that prevents the capture of a capital or the desolation of a district. At any rate, there is no way known to the world to avoid such a course of procedure, and the necessities of modern warfare demand a thoroughness and completeness in the preparations that no country can neglect.

It is in this view that a large appropriation for the manufacture of arms at the National Armory is deemed imperative. The rifle issued to the Army and the militia compares favorably with the best breech-loader either here or abroad. It is an arm that may not be superseded for many years to come, and if it be obliged to yield to one of superior merit, the effect will not be to render it obsolete, but to make it secondary to one using the same cartridge but having greater rapidity of fire, so that the present single breech-loader will always be a powerful weapon, even when compared with the possible magazine-gun of the future. We cannot be wrong in laying up a reasonable supply of these, therefore, especially as the magazine-gun that may some day be adopted for Army service may require years of invention and improvements to reach that degree of simplicity in its mechanical arrangements necessary to render it suitable for the soldier.

I can only reiterate these views, and express the hope that the wisdom of Congress will grant what we so urgently require.

#### TARGET PRACTICE.

I have made an estimate for the smallest amount of money which, in my judgment, will be needed to provide ammunition for the use of the service, viz, \$200,000. To make our soldiers good marksmen, an ample supply of ammunition must be provided, and this cannot be done unless sufficient money is annually appropriated.

The amount asked for will provide between 7,000,000 and 8,000,000 cartridges, and if all should be expended in target practice, it would not give each soldier over 400 cartridges for the year; certainly a very small number when the importance of the subject is considered. But, as a matter of fact, a large part of this quantity is expended for other purposes—in battle, scouting, escort duty, drills, and occasions of ceremony—so that the soldier can hardly expect to fire over 25 rounds per month. The great interest which has sprung up within the last four years in the Army in regard to target practice has not been fostered to the extent it should have been, owing to the lack of funds to procure a sufficient supply of ammunition, and perhaps a well-digested system of target practice and the necessary appliances.

By the distribution to the service of a text-book on rifle firing, prepared by your order, under my direction, by Colonel Laidley, of this department, a system has been adopted which, though undoubtedly susceptible of improvement in future, will, with the necessary appropriations for cartridges, enable the soldier to perfect himself as a marksman, and to develop to their fullest extent the many excellent qualities of the Springfield rifle.



## TEST OF METALS.

The department has now in its possession, set up at the Watertown Arsenal, the finest machine in the world for testing the strength of metals and other materials, and I have asked for a small annual appropriation to enable it to be used. This machine was authorized by Congress, and constructed under the immediate supervision of the late United States board to test iron, steel, &c. Valuable results have already been obtained from its limited use under circumstances very unfavorable, and it is suggested that a wise policy and a just appreciation of the advantages to inure to the various industries of the country will prompt the Congress to grant the small amount of money necessary to develop its capacities.

The work already accomplished has enlisted the active sympathy of scientific men of all classes, and metal manufacturers and users, who have not limited their expressions of approval, but have supplemented them with funds to finish work which was commenced, but could not be finished owing to the failure of Congress to appropriate the wished-for money.

From what is known of the wants of officers having charge of government constructions, the lack of definite information on the part of civil engineers, architects, and mechanical engineers throughout the country, and their utter inability to obtain correct data on which to base their calculations, for the need of which large sums have annually to be expended in order that the errors made may be on the side of safety, there is no purpose for which an appropriation could be granted which would yield so large and immediate a return in the way of money absolutely saved as a grant for working this machine and publishing the results obtained, and in the correctness of this opinion I am confident that I will be supported by the whole body of scientific men and manufacturers of metals of superior quality throughout the land.

## EQUIPMENT BOARD.

Upon my request a board of officers from the line of the Army was constituted by the Secretary of War to consider the subject of bayonets and intrenching tools. This board was in session nearly four months, and the result of its labors has been published to the Army. As rapidly as possible those of its recommendations which have been approved by the Secretary, and which relate to the stores provided by the Ordnance Department, will be carried out.

## INDIAN RIFLES.

As much has been said in official reports and in the public prints respecting the quality of arms used by our Indian tribes, and their great superiority to the arms in the hands of our troops in accuracy and range, I inclose a report made at the National Armory on a number of Indian guns sent to me from the field. I am willing to rest the reputation of the Springfield rifle and carbine on the facts developed in the trial and recorded in this report. Not even such an admirable weapon as the Springfield rifle can be expected to give satisfaction to every officer and soldier, but it is my firm belief that it comes very near it.

## SPRINGFIELD AND PEABODY-MARTINI RIFLES.

In this connection I desire to invite attention to the inclosed report on certain comparisons instituted between the Springfield and Peabody-



**Martini rifles.** These trials were made to show whether the latter was so far superior to the former as was intimated by letter-writers during and after the siege of Plevna, in the Russo-Turkish war.

That the ultimate range of the Peabody should be greater was conceded, on the simple fact that the charge of powder used was 134 grains greater and the bullet 75 grains heavier than the charge of powder and bullet of the Springfield. The trial, however, showed for the Springfield "superior accuracy," "accompanied with more power than is required to disable a man at ranges at which it is practically impossible for a marksman to hit so small an object." "At ranges of 1,000 yards and upward, the trajectory of the Peabody is slightly flatter, but at shorter ranges—those at which a rifle will ordinarily be fired in service—the trajectory of the Springfield is the flatter, owing to its higher velocity." At 1,669 yards—the longest range in the proving-ground—the Springfield hit the target— $8' \times 12'$ —3 times out of 10, while the Peabody was fired 60 rounds to hit the target the same number of times. The Army should be satisfied with such a record. I have directed experiments to be made with the Springfield rifle up to 2,500 yards, and anticipate excellent results.

#### MULTIBALL CARTRIDGES.

I append a series of reports on the multiball cartridge for revolver. For use in the rifle and carbine, it has not been received with favor, the reports from the field being almost unanimously against it.

Its efficiency as a revolver cartridge will depend on its results at very short ranges—certainly within 25 yards—and on the extent of its scattering. I quote from a report of Captain Greer, Ordnance Department, a most capable and experienced officer and experimenter, made June 7, last :

With regard to dispersion of fire, which is the true *raison d'être* of these cartridges, an inspection of the tables shows that at short ranges there is none at all, the bullet holes of each shot nearly coinciding. At longer ranges—75 to 100 yards—there is a considerable dispersion of balls; but they have too little power to do much execution.

The department will continue its endeavors to adapt this cartridge to the revolver, and it may be that some simple change in its arrangement and form may fulfill the conditions necessary to make it a success.

#### CLERICAL FORCE.

In compliance with your instructions, I have omitted in my annual estimate to ask for additional clerks, but I may be pardoned in representing the inadequacy of the force now by law allowed in this office. For the fiscal year ending June 30, 1876, there were allowed, besides the chief clerk, *three* clerks of class four, *three* of class three, *three* of class two, *eight* of class one, *one* messenger, *one* laborer, and *eight* enlisted men, a total of twenty-eight, and in grades and number these were not more than sufficient to meet the wants of the office. Since then the current work of this office has materially increased and is increasing annually, while the clerical force has been decreased. As a consequence, much important work is now, and has been for several years, running behindhand, much to the inconvenience and detriment of the public service, and not unfrequently to the hardship of individuals. I hope that, at the proper time, you will see fit to ask Congress to restore the clerical organization to its former grading.

The following statement will give some idea of the magnitude of the work of this office during the past year:

Number of cash and property returns of all kinds examined.....	7, 192
Number <del>remaining</del> unexamined on account of insufficient clerical force.....	4, 456
Letters and other papers received, briefed, and entered upon the records of the office .....	15, 494
Letters, orders, and indorsements written and sent out.....	24, 094
Number of blanks, public documents, &c., prepared and distributed.....	35, 022

I have the honor to submit the following papers, heretofore referred to:  
*Appendix A.*—Statement of principal articles procured by purchase and fabrication at the arsenals during the year ended June 30, 1879.

*Appendix B.*—Statement of ordnance, ordnance stores, &c., issued to the military establishment, exclusive of the militia, during the year ended June 30, 1879.

*Appendix C.*—Apportionment for the fiscal year ended June 30, 1879, of the annual appropriation of \$200,000 for arming and equipping the militia, under sections 1661 and 1667 Revised Statutes.

*Appendix D.*—Statement of ordnance, ordnance stores, &c., distributed to the militia from July 1, 1878, to June 30, 1879, under section 1667 Revised Statutes.

*Appendix E.*—Statement of ordnance, ordnance stores, &c., distributed to colleges from July 1, 1878, to June 30, 1879, under section 1225 Revised Statutes.

*Appendix F.*—Statement of ordnance stores, &c., distributed to the Territories and States bordering thereon from July 1, 1878, to June 30, 1879, under the joint resolutions of July 3, 1876; March 3, 1877; March 9 and June 7, 1878.

*Appendix G.*—Statement of ordnance and ordnance stores, &c., issued to the executive departments under the provisions of the act of March 3, 1879.

#### REPORTS OF THE CONSTRUCTOR OF ORDNANCE.

*Lieut. Col. S. Crispin, Ordnance Department.*

*Appendix H.*—Construction of the 11-inch M. L. rifle, converted from a 15-inch S. B. Rodman gun.

*H*<sup>1</sup>.—Construction of a 3-inch B. L. rifle.

*H*<sup>2</sup>.—Construction of a 3.16-inch M. L. rifle, *chambered*.

*H*<sup>3</sup>.—Construction of a 3.16-inch M. L. rifle, *rapid twist*.

*H*<sup>4</sup>.—Gas-checks for B. L. rifles.

*H*<sup>5</sup>.—Alteration in 12-inch rifle-carriage.

*H*<sup>6</sup>.—Proposed chambered rifle, 4.50-inch caliber.

*H*<sup>7</sup>.—Report on experimental cannon powders, Capt. C. S. Smith, Ordnance Department.

#### REPORTS OF THE ORDNANCE BOARD.

*Lieut. Col. S. Crispin and Lieut. Col. T. G. Baylor, Ordnance Department ;  
 , Capt. F. H. Phipps, recorder.*

*Appendix I.*—Gunpowders.

*I*<sup>1</sup>.—Progress report on powders for 4.50-inch rifle.

*I*<sup>2</sup>.—Progress report on powders for 8-inch rifle.

*I*<sup>3</sup>.—Progress report on 3.50-inch Deane bronze gun.

- I<sup>4</sup>*.—Hotchkiss revolving cannon, caliber 1.5-inch.
- I<sup>5</sup>*.—Flank defense carriage for Hotchkiss revolving cannon.
- I<sup>6</sup>*.—Relative destructive effects of different Hotchkiss projectiles.
- I<sup>7</sup>*.—Report on Hotchkiss revolving cannon (light field model), caliber 1.50-inch.
- I<sup>8</sup>*.—Progress report on 3-inch B. L. rifle.
- I<sup>9</sup>*.—Progress report on 3.17-inch M. L. rifle, chambered.
- I<sup>10</sup>*.—Progress report on 8-inch B. L. rifle.
- I<sup>11</sup>*.—Progress report on 11-inch M. L. rifle, converted from a 15-inch S. B. Rodman gun.
- I<sup>12</sup>*.—Reports on a Gatling gun, caliber .45-inch, English model, having a new pointing apparatus.
- I<sup>13</sup>*.—Report on multiball cartridges for Gatling gun.

## MISCELLANEOUS.

*Appendix K*.—Annual report of the principal operations at the Rock Island Arsenal, 1879, Maj. D. W. Flagler, Ordnance Department, commanding.

*Appendix L*.—Progress report upon the artesian well at the Benicia Arsenal, 1879, Lieut. Col. J. McAllister, Ordnance Department, commanding.

*Appendix M*.—Measurement of powder pressures in cannon by compression of oil. Dr. W. E. Woodbridge.

*Appendix N*.—Trajectories of army revolvers. Capt. J. E. Greer, Ordnance Department.

*Appendix O*.—Trajectories of the Springfield and Peabody-Martini rifles. Capt. J. E. Greer, Ordnance Department.

*Appendix P*.—Experiments with small-arms—space between bullet and powder. Capt. J. E. Greer, Ordnance Department.

*Appendix Q*.—Action of sea-water on brass cartridges. Capt. J. E. Greer, Ordnance Department.

*Appendix R*.—Report on the manufacture of certain life-saving guns. Lieut. C. W. Whipple, Ordnance Department.

*Appendix S*.—Description of the Lyle-Emery grapple-shot. Lieut. D. A. Lyle, Ordnance Department.

*Appendix T*.—Description of the Laidley cavalry forge. Col. T. T. S. Laidley, Ordnance Department.

*Appendix U*.—Swollen barrels in service rifles. Capt. J. E. Greer, Ordnance Department.

*Appendix V*.—Reports on Indian arms. Capt. J. E. Greer and Lieuts. D. A. Lyle and R. Birnie, jr., Ordnance Department, and Master Machinist S. W. Porter, National Armory.

*Appendix W*.—Reports on multiball cartridges for small arms. Maj. J. M. Whittemore, Capts. E. M. Wright, and J. E. Greer, and Lieuts. R. Birnie, jr., and C. C. Morrison, Ordnance Department.

*Appendix X*.—Report on range-finders. Capt. F. H. Phipps, Ordnance Department.

*Appendix Y*.—Showing stations and duties of the officers of the Ordnance Department on the 1st of October, 1879.

I have the honor to be, very respectfully, your obedient servant,  
S. V. BENÉT,

*Brigadier-General, Chief of Ordnance.*

## REPORT OF THE CHIEF OF ENGINEERS.

OFFICE OF THE CHIEF OF ENGINEERS,  
Washington, D. C., October 20, 1879.

SIR: I have the honor to present, for your information, the following report upon the duties and operations of the Engineer Department for the fiscal year ending June 30, 1879.

## OFFICERS OF THE CORPS OF ENGINEERS.

The number of officers holding commissions in the Corps of Engineers, United States Army, at the end of the fiscal year was 105 on the active list, and 5 on the retired list; the latter, however, under the law of January 21, 1870, not being available for duty. In the duties devolving upon the corps by law and by its organizations, the employment of a number of scientists and assistant engineers has been necessary.

Since the last annual report the corps has lost, by death and retirement, four of its officers: Col. Henry Brewerton (retired), who died at Wilmington, Del., April 17, 1879; Col. I. C. Woodruff, who died at Tompkinsville, N. Y., December 10, 1878; Lieut. Col. B. S. Alexander, who died at San Francisco, Cal., December 15, 1878; and Brig. Gen. A. A. Humphreys, Chief of Engineers, who was retired June 30, 1879, at his own request, after more than forty years of continuous active service.

There have been added to the corps, by promotion of graduates of the Military Academy, three second lieutenants and two additional second lieutenants, whose commissions date from June 13, 1879, but who did not become available for duty till after the close of the year, and are, therefore, not included in the strength of the corps.

On the 30th June, 1879, the officers were distributed as follows:

On duty, office Chief of Engineers, including the chief.....	4
On duty, Public Buildings and Grounds, District of Columbia.....	1
On duty, fortifications.....	2
On duty, fortifications and light-house duty.....	2
On duty, fortifications and river and harbor works.....	15
On duty, fortifications, river and harbor works, and light-house duty.....	5
On duty, river and harbor works.....	27
On duty, river and harbor works, and light-house duty.....	6
On duty, survey of Northern and Northwestern lakes and Mississippi River.....	3
On duty, jetties at mouth of Mississippi River.....	1
On duty, explorations of country west of one hundredth meridian.....	4
On duty with Battalion of Engineers.....	4
On duty with Battalion of Engineers and fortifications.....	1
On duty with Battalion of Engineers and Military Academy.....	2
On staffs of generals commanding divisions and departments, and on river and harbor works.....	2
Detached on duty with the General of the Army, generals commanding divisions and departments, Light-house Establishment, Military Academy, Department of State, and the Board of Commissioners of the District of Columbia.....	22
Total.....	105

## SEA COAST AND LAKE-FRONTIER DEFENSES.

During the past fiscal year work upon our sea-coast defenses has been limited, in accordance with the terms of the act of March 23, 1878, to their protection, preservation, and repair.

These works are subject more than any other national structures, with the exception, perhaps, of light-houses, to the destructive and deteriorating effects of the sea, and the amount heretofore appropriated for the

tioned objects has proven insufficient, many necessary works and protection remaining unexecuted at the close of the fiscal year and want of funds.

Whatever has been made for several years past in the construction of new, or in the modification of our old works (built before the introduction of modern ordnance and armored ships), for want of appropriations therefor, and I beg to renew the remarks and the recommendations of the last annual report from this Department in relation thereto as follows:

The plan to govern the future construction of our works was elaborated in 1869 and was subsequently stated in detail in Executive Document No. 271, House of Representatives, forty-first Congress, second session, where it will be seen the system received the approval of the General of the Army and the Secretary of War, and since then has been repeatedly indorsed by the action of Congress.

The principal features of this system are the use of heavy earthen barbette batteries, and of traverses, of heavy mortar batteries, and of obstructions in the water (including the electrically propelled torpedoes) to hold vessels from running past the batteries and the cities or depots beyond them. The modification of the casemated forts was at that time deemed premature, it being then thought preferable to wait for the further development of iron-clad fleets and their armaments, and to rely on the experience of foreign nations.

From 1873, while appropriations for coast defense were granted by Congress, a system of defense by barbette batteries for heavy guns and mortars; and a system of defense by torpedoes—a subject of continuous study up to the present—has been developed which only requires a sufficiency of material and trained men to put into practice when needed. But torpedo defense, however efficient in itself, cannot stand alone; the torpedoes must be protected by shore batteries. Unarmored batteries, however, provided with a small fraction only of the number which they were designed, and those of insufficient caliber, and mortar batteries, though aided by torpedoes, will form but a feeble defense against a powerful fleet prepared and now being prepared to take the high seas.

The powers of Europe do not place their reliance on barbette batteries. They are now constructing, casemated forts, some of which are provided with armor-plating and others with iron casemate-shields to protect the gun, and to defend it, both from direct and curved fire. This department, while recommending the construction of barbette batteries as an initiatory means of defense, has comparatively small expenditures for a partial defense for the numerous harbors of our coast. It has always insisted that the efficient service of the large fleet in them would require high parapets and depressing or counterpoise batteries. It has also, from the beginning, looked forward to the ultimate conversion of the casemated forts, which would admit the change, for the reception of a more powerful caliber, and to the possible construction of new works. Within the last few years, in furtherance of these views, a large casemated fort has been constructed to take the place of old Fort Lafayette at the Narrows entrance to New York Harbor. Plans have also been prepared for modifying the casemates of Fort Schuyler at Albany, New York, and for completing Fort Carroll on the approaches to Baltimore. The construction of other casemated works is now a subject of study. It will require large expenditures to make the foregoing modifications, and to convert the barbette and mortar batteries and furnish them with suitable armaments. It is an act of prudence to make the beginning without delay. The first three months of a war under the present condition of our defenses would be a national calamity. The expenditure that would be needed to thoroughly fortify our coast against attack. Our great cities, New York, Philadelphia, Boston, New Orleans, Baltimore, and Washington, should they fall into the hands of the enemy, would suffer ten times more than the cost of all the forts necessary to protect them against such disaster. But such reverses would also be great calamities, crippling its war power.

A great change in ships and their armaments was initiated, Great Britain has appropriated \$40,000,000 for the defense of its most important harbors. In addition she has already expended about \$50,000,000 upon her iron-clad fleet. It is well to profit by her example. There is nothing so costly to a nation as to be unprepared for war. In fact, to be prepared for war will often prevent it; and a nation may not feel the daily imminence of war with great foreign powers, as yet with incomplete or inadequately armed defenses for our great sea-ports. The attitude of belligerency, which we not unfrequently have to assume, has a depressing effect it should have, nor is it accompanied with a justly founded confidence on our own part. The neglect of suitable preparation cost France



many millions of treasure, a portion of her territory, and a great humiliation. The same must inevitably happen to the United States if it does not push forward its coast defenses and provide them with guns like those possessed not only by the great powers, but even by smaller nations.

That our forts should be efficient we must have guns of power not inferior to those that will be brought to contend with them. These guns must have a protection—whether by earthen parapet and depressing carriage or by iron armor—no less efficient than that which protects the hostile gun.

Our system of torpedo defense must rely upon forts for protection, otherwise it would be rendered harmless. It would be speedily destroyed by an enemy if one of its iron-clad fleets were suffered to approach it unopposed. It is, therefore, by the combination of the two systems, viz, the torpedo defense and shore batteries, that our harbors can be made secure against the powerful iron-clads of the present day in the event of a war with a maritime nation.

It concerns the honor of the United States, when involved in controversy with other powers, to be able to appeal to the sword, but that appeal should be accompanied by the consciousness that the weapon appealed to would not be inferior to that held by the adversary. This relation of inferiority may at present exist though the adversary be a comparatively weaker power.

We have the assurance that iron plates can be manufactured in this country equal in magnitude and not inferior in quality to those which fifteen years of experience have enabled the English rolling-mills to turn out.

During the past fiscal year plans have been prepared for the modification and completion of two more very important casemated works, viz, the fort at Sandy Hook, the outermost of the works for the defense of the southern approaches by sea to the harbor and city of New York; and Fort Wool, designed to command the entrance to Hampton Roads and defend the passages from sea to the city of Norfolk and its navy-yard. These works, with the three important casemated works especially mentioned in last year's report, viz, Fort Schuyler, commanding the East River approach from sea to the harbor and city of New York; the work designed to replace old Fort Lafayette at "The Narrows" entrance to New York Harbor; and Fort Carroll, which commands the approach from sea to the rich and important city of Baltimore, await appropriations for their construction. Their plans, which have been carefully prepared in the light of full information respecting the recent great improvements in ordnance and armor, provide for mounting the heaviest of modern rifled guns, and for resisting the projectiles of cannon of the immense calibers now possessed by nearly every maritime nation of Europe. Plans for similar modifications of the more important of the other casemated defenses of our harbors will be made as rapidly as practicable, and in the mean time it is urgently recommended that appropriations be made by Congress for the works just mentioned and for the earthworks recently designed for many of our harbors for mounting heavy rifled guns and mortars, which have been already partially constructed, or for which the plans are ready for execution, as will be observed in the synopsis of the reports of the several officers in charge.

It is certain that in our present condition, injuries to our citizens abroad and insults to our flag, could not be resented with that vigor and promptitude demanded by the dignity and honor of the nation, and justified by a knowledge that our fine harbors, important navy-yards rich commercial cities, and depots for military and naval stores were guarded by impregnable fortifications and obstructions; and in earnestly urging the importance of early and reasonable appropriations for our sea-coast defenses I cannot do better than to quote the language of my distinguished predecessor in his letter to the Military Committee of the House of Representatives contained in Report 354, House of Representatives, Forty-fourth Congress, first session, pages 179-181, as follows:

In the event of war with a maritime nation, if we had no well-digested system of sea-coast defense ready for use, the cruisers and war vessels of the enemy could run



into our harbors, and, without landing, could either destroy the property along our shores, or else lay the people under contribution. The accurate detailed charts of our harbors and channels published by the United States Coast Survey are accessible to all such nations, and are doubtless in their possession. If the enemy possesses depots and arsenals in close proximity to our shores, the arrival of such armed vessels will follow in a few hours after the declaration of war. Thirty-six hours' steaming could bring vessels from Halifax; six hours, vessels from Havana; and ninety-six hours, vessels from Victoria, Vancouver's Island, to important harbors of the United States. There might be very little time for preparation to meet the assaults of iron-plated ships, for they are plated with from six to fifteen inches of iron, and carry rifled guns from nine inches to fourteen inches bore, all of which guns are more powerful than any gun we have in our service. With a fleet, or even a single vessel of this kind in one of our harbors, it would be of no avail to collect troops in the city or town threatened. Suppose, with our railroad facilities, we could concentrate 100,000 men in twenty-four hours at the point threatened, of what use would they be against the armored ship? Suppose that in a night the men concentrated could throw up earthworks and mount 32-pounders, 42-pounders, 100-pounder rifles (even if it were possible to handle guns of this small size with the rapidity assumed), what injury could all this do to the armored ship in question? The projectiles from such batteries would fall harmlessly from the side of the enemy. While lying, if need be, beyond the range even of our guns, with his more powerful armaments he would pierce such parapets through and through, dismount the guns, and explode such magazines.

But it may be said that we would mount guns as powerful, and even more powerful than those of the enemy. Doubtless this would be done; first, if we had such guns in our service, and, second, if we had the time.

Our largest gun, of which we have any number, is a 15-inch smooth-bore, and weighs over 25 tons. We have about 325 of them for our entire coasts of 12,600 miles, exclusive of Alaska, and beyond a range of 1,200 yards it is a less powerful gun than the 9-inch rifle of 12 tons. The 10-inch rifle weighs 18 tons; the 11-inch, 25 tons; the 12-inch, 35 tons; and the 14-inch, 81 tons; and these guns are immeasurably superior to our 15-inch smooth-bore. They are the kinds of guns we must mount in batteries against the iron-plated vessels. But their great weight and size require corresponding dimensions in the batteries in which they are placed, and in the strength and solidity of the platforms upon which they are mounted. The parapets and traverses of earth and sand to protect them must be three and even four times as thick and massive as they were formerly built, to resist the armaments of fifteen years ago. Where the parapets of earth were but 10 feet in thickness, now they must be 40 feet. Guns that were formerly dragged with ease by fifteen or twenty men, and placed in position over night, are now supplanted by armaments of such huge masses that special mechanical appliances are required to move them even slowly, and cannot be lifted upon their supports without the aid of hydraulic power. No matter how many men may be at our disposal, the time required to place the modern armaments in position is vastly greater than for the guns of fifteen years ago, and before such works could be improvised in a harbor, the enemy in his iron-clads will have accomplished all he desired, and have sailed or steamed for some other harbor to repeat the injuries of the first. But suppose the harbor in question was on the New England coast, and the season of the year the winter—when the the ground is frozen hard—then the erection of efficient earthen batteries would be out of the question. Or suppose the harbor was on the Gulf coast, and the season the fall of the year, when only the acclimated could resist the effects of the malarial shores; under such circumstances the erection of efficient batteries would be exceedingly difficult.

Three methods suggest themselves for preventing the enemy from entering our harbors:

1st. To stop up the channel-ways by permanent obstructions sunk across the channels, effectually closing the harbor to all egress as well as ingress.

2d. To provide for the harbors a force of armed vessels and torpedo-boats superior in strength to the fleet of armored vessels and torpedo-boats which the enemy could bring against us. But this would require us to build and maintain as many fleets of this character as we have harbors to be defended, and would involve an expenditure that this country could not afford. The cost to us of the iron-clad fleet during the late war amounted up to January 1, 1870, to \$35,371,064.11. (See Executive Document No. 72, Senate, Forty-first Congress, second session.) The cost to us of such vessels as the British ship *Monarch* would not be less than \$400,000 per gun, and the deterioration of the vessel not less than 5 per cent. per year.

3d. To place guns of proper size and caliber in suitable batteries along the shores of the channels and fairways leading into the harbors, and to obstruct these channels by electrical torpedoes that can be rendered in an instant harmless for our own vessels, or active against an enemy, and which, acting as an obstruction, will hold the enemy under the fire of our guns.

This method of batteries and of obstructions is the least expensive method that can

be devised, for our new batteries do not cost on the average over \$16,000 per gun. It is the method that has been pursued by all nations from the earliest times. It was used by our English ancestors in the colonial times during the French and Spanish wars, and it was used during the Revolution.

Batteries of heavy guns, with obstructions to hold the vessels under the fire of the guns, is the true method of defense for our harbors, and is the means we are now applying and collecting, and these works should not be abandoned. Our labors are now restricted to the preparation of powerful barbette batteries (by the enlargement of old and the construction of new earthworks) capable of carrying the large modern guns; and to the collection of torpedoes for obstructions. The works are almost wholly of earth and sand; they are the cheapest works that can be devised, but they must be prepared before actual hostilities are upon us.\* This is the practice of all maritime nations, and England, with the most powerful fleets in existence, has expended upon nine harbors of her coast, from 1861 to 1875, 6,987,910 pounds sterling, nearly \$35,000,000 in gold (see Report Fortifications, &c., ordered by the House of Commons to be printed August 11, 1875, 432), and is still actively engaged in this work.

Our country is contiguous throughout its northern boundary with the most powerful maritime power on the earth, and close upon our southern shores is another whose strength is not to be despised. These are the nations with whom complications are most likely to arise.

Many of our works are in an unfinished, transition state, our supplies of torpedo materials are insufficient, the caliber and force of our guns are too small, and under these circumstances I must reiterate, the work on our sea-coast fortifications should not, in my judgment, be suspended.

The estimates submitted, based on the several estimates of the officers in charge, which have been carefully revised, present the amounts which, in the judgment of this department, are necessary for the completion or commencement of projects during the coming fiscal year.

Special attention is invited to the estimate of \$100,000 for providing torpedoes or submarine mines to be stored in our fortifications, from which they will be planted, in time of war, in the channels and fairways of our harbors.

Fortifications and torpedoes should be considered the twin defenses of our coasts, the latter being designed to form an obstruction or obstacle at the entrances to our harbors and to hold an enemy's vessel under the fire of the former.

The charges in the torpedoes being fired by the electrical current, many parts of the system cannot be obtained in an emergency. It is to procure and store torpedoes and such portions of the apparatus as cannot be speedily obtained in the event of sudden hostilities that the appropriation is asked.

Special attention is also asked to the item of \$100,000 for preparing our most important forts for operating submarine mines, by providing bomb-proof cover, galleries of approach, &c.; all these being essential to the successful operation of the torpedo system of defense, in connection with the forts themselves.

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#### BOARDS OF ENGINEERS.

*The Board of Engineers for Fortifications*, stationed at New York City, consisting of Col. J. G. Barnard, Col. Z. B. Tower, Col. H. G. Wright, and, for the time being, the officer in charge of the defenses under consideration, has been engaged upon the duties, and has submitted the reports mentioned in the following summary:

In September, 1878, the board presented memoranda upon our system

\* Since the date of the report from which this extract is quoted, this department has, with much care, and in the light of full information respecting the recent great improvements in ordnance and armor in European maritime countries, prepared plans for the modification of certain of the most important of our old casemated works, and has submitted estimates for appropriations for the same. (See page 432.)

coast defense, setting forth briefly the action of this board in reference hereto, the present weak condition of the works, and the immediate necessity of appropriations for resumption of work upon them, in accordance with plans adopted for their modification to prepare them for the reception of guns that will be available against iron-clad fleets.

*January 30, 1879.*—The board reported upon the government reservation at Sandy Hook, N. J., its necessity for defensive purposes, and the propriety of permitting the temporary occupation of some portion thereof by a private company.

*September 4 and October 28, 1878.*—Upon the use of 8-inch converted rifles in casemates, and the distribution of those ready to be mounted.

*November 9, 1878.*—Upon system to be adopted for the delivery, storage, and preservation of torpedoes and their accessories in forts, for the defense of which they will be needed.

*February 8, 1879.*—The board, with Col. J. N. Macomb, Corps of Engineers, as member thereof for that purpose, to whom had been previously referred the subject of the growing obstructions in the harbor of the Delaware Breakwater, submitted its recommendations for remedying the same, together with its views upon Captain Ludlow's project for improving this artificial roadstead.

*March 23, 1879.*—Project submitted for the expenditure of the appropriation for torpedoes for harbor defense for fiscal year ending June 30, 1880.

*April 28, 1879.*—Defenses of Fernandina Harbor, Florida. The board during the year 1878 had prepared plans for modifying Fort Clinch, but reserved them for further study. Reconsidering the question, quite different plans have been prepared during the past year, which, while much less expensive, are thought to be quite commensurate to the present requirements of the position. These plans, with report thereon, were submitted April 28, 1879.

*May 22, 1879.*—Report submitted upon application of Col. G. W. Getty, requesting permission to construct models of certain of the fortifications of the United States to be used for purposes of instruction at the artillery school.

*Fort Wool, Hampton Roads, Virginia.*—This fort has been a subject of much study on the part of the board. A plan for its completion by the addition of a barbette tier for 12-inch rifle guns, reserving its casemates (embrasures strengthened as far as possible) for 9-inch rifles, was prepared as early as 1870. With the improvement of guns from year to year, up to their great increase of caliber as developed very recently, a reconsideration of this work has been necessary. The first study of the past year, aiming at the greatest development of offensive power attainable, gave plans for modifying Fort Wool for the reception of twenty-one 81-ton guns and five 12-inch rifles. The ultimate opinion of the board, however, favored a less expensive work, and a revision of the plans to meet this view was made, with a report thereon submitted June 14, 1879. In connection with the works devised already and that will be required in the future on the Fort Monroe side of the entrance to Hampton Roads, the less costly plans are deemed sufficient.

*Sandy Hook, New Jersey.*—The modification of the fort devised for the northern point of Sandy Hook has occupied the attention of the board for the past six months. Almost every possible combination has been studied and drawn to exhibit the power and capacity of the fort if finished on its present lines. The various phases of the question thus presented gave, by comparison and arrangement, the final plans adopted, which, though not the strongest possible combination, seemed quite

proportionate to the development elsewhere, as well as to the needs of the position.

The board has also under study the subject of the modification of the casemated fort at Willet's Point, eastern entrance to New York Harbor. Plans exhibiting the proposed modifications are well advanced towards completion.

#### PROJECT FOR THE YEAR 1879-'80.

Two years since, this board in its annual report set forth fully the work it had done in planning defenses for the Atlantic, the Gulf, and the Pacific coasts, in accordance with conclusions reached in 1869—and reported upon—as a system not too costly and quite practicable in an engineering point of view, though but a partial solution of the question of national defense. The work of the board involved the consideration of every harbor upon our extended sea and lake coasts that demanded protection. Besides modifying nearly all of the barbette batteries of existing works, and those exterior thereto, many new batteries were planned. The system, however, was one of defense by barbette guns with the maximum caliber of the 12-inch rifle. Though with slight alterations and the substitution of suitable platforms, the barbette batteries projected and partly built can be made to accommodate the very large guns recently manufactured at the Essen, Woolwich, and Elswick factories, yet this board has been and is still of the opinion that such guns should be put under cover, either in casemates or in turrets. For the past two years the question before it has been mainly the conversion of some of the more important forts to the reception of such guns. Thus far it has dealt with works which, from the width of their casemates or from their state of progress, permitted the conversion or the finishing in accordance with the general method adopted for the new work planned for the site of old Fort Lafayette. Designs have thus been presented for both the eastern and southern entrances to New York Harbor, viz., for Fort Schuyler, Fort Lafayette, and Sandy Hook; also, for Fort Carroll, entrance to Baltimore Harbor; and for Fort Wool, Hampton Roads.

There are many important forts which were finished according to the system that prevailed prior to 1860, and which will not permit modification of their casemates for the reception of the large guns now required for sea-coast defense. Of these works may be mentioned Forts Warren, Adams, Trumbull, Wadsworth, Delaware, Taylor, Jefferson, and fort at Fort Point, San Francisco Harbor, Cal. How to utilize these works, and by what means prepare them for guns absolutely necessary for defending the positions they occupy, are questions now before this board, and which it proposes taking up during the present year. Their discussion will involve the question of turrets, of machinery, &c., and will require the aid of good draughtsmen, themselves capable mechanical engineers.

Naval power has made rapid advances within the past ten years. Shore defense seems to have gained but little beyond its torpedo lines, except that incidental to the increase of the caliber and power of guns. There has been but little accomplished in the way of making provision for utilizing such guns for shore defense. The present problem is to provide protected emplacements for these large guns in or on our sea-coast works, and with such mechanical appliances that they can be maneuvered with facility like those on ship-board. Until that end is accomplished, the shore defense will be by all odds inferior to the naval attack, and the safety of our harbors will depend entirely upon our ability to maintain our torpedo lines in the face of a fleet of iron-clads.

## TORPEDO DEFENSE.

The work of the board in this connection, for which special duty Major L. Abbot, Corps of Engineers, in charge of the torpedo school at Tillets Point, is a member, is exhibited as follows:

During the past year Major Abbot has devoted much time and labor to the final reduction of the data accumulated since the beginning of the trials, in 1869, for developing a system of torpedo defense for our harbors and navigable channels.

The subjects of subaqueous explosions and of electrical fuzes have been thoroughly discussed, and 116 pages treating of the former have been printed by soldiers of the Engineer Battalion, and are now in the hands of the board.

The results of this analysis are highly satisfactory. Major Abbot has been able to revise the constants of his formulæ so that it is evidently applicable to all varieties of modern explosives. The important subject of the destructive range of torpedoes can thus be treated in the manner usually adopted for engineering problems.

The subjects covered by this investigation are much too extensive to be even mentioned here; but the following table, exhibiting the relative intensity of action of several of the modern explosives, when exploded under water in torpedo cases, is given as a sample of the work:

Dynamite, No. 1 .....	100
Gun cotton .....	87
Dualin .....	111
Rendrock .....	94
Dynamite, No. 2 .....	83
Vulcan powder .....	82
Mica powder .....	83
Nitro-glycerine .....	81
Hercules powder, No. 1 .....	106
Hercules powder, No. 2 .....	83

It should be added that, for various reasons not necessary to discuss, the board is agreed that dynamite No. 1 should be adopted for our service.

To illustrate the precision of analysis rendered possible by the formulæ deduced from the data collected, the following example is given:

The problem is to determine the crater radius ( $r$ ) which will be produced in ice from 8 to 10 inches thick, by the explosion of ( $c$ ) pounds of a modern explosive, of which the constant is ( $E$ ) submerged ( $S$ ) feet below the surface, the angle from the nadir to the line of fracture being ( $\delta$ ). For dynamite No. 1 the numerical value of  $E$  is 186. The formulæ are:

$$r = \frac{S}{\cos(180 - \delta)}$$

$$(\delta + E) \cos^{2.1}(180 - \delta) = \frac{10.49S^{2.1}}{c}$$

Twenty-one trials were made with dynamite No. 1, dualin, and gun-cotton, with charges varying from 1 to 10 pounds, and submergences varying from 2 to 13.5 feet, and crater radii varying from 0 to 14.1 feet. The maximum discrepancy between observation and the indication of the formulæ was 1.2 feet in the crater radius, the mean discrepancy being 4.5 inches.

Thirty-five shots have been fired in the submerged ring, chiefly to test new explosives; and this work will be continued during the coming season.



Many experiments have been made with electrical fuzes, employing original methods and apparatus. The object has chiefly been to detect any deterioration due to long storage. The result has shown that our adopted patterns exhibit none, and some of the samples have been on hand eight years.

One of our buoyant mines, after being submerged in the channel off Willets Point for four years and five months, has been found to be in a perfectly serviceable condition, thus sufficiently proving its trustworthy character.

Attention should be invited to a very compact and simple dynamo-electric machine made by the Laflin and Rand Powder Company. The cost is only twenty-five dollars, and the instrument is admirably adapted for use as a portable igniting apparatus for torpedoes and heavy ordnance. It has been carefully tested by practical use at Willets Point during the past two years.

A supply of torpedo cable insulated with kerite and made in this country has been purchased for trial during the past year. The insulation is low, varying from fifty to one hundred megohms per mile, but the material promises well in respect to permanence. Time alone can properly test its value, and measures have been taken to determine this important point.

Experiments have been continued with the electric light to test its value as a means of protecting our mines against operations of the enemy. The results upon the whole are satisfactory.

To determine the destructive range of countermines which may be employed by an enemy against our mines, a charge of 500 pounds of dynamite No. 1 was exploded last autumn. This charge was contained in an iron torpedo resting just above the bottom in water 20 feet deep. It was surrounded by our service mines at various distances, and the result proved that its power of injuring them was far less than the estimates given in foreign journals. A charge of eight pounds of dynamite No. 1, contained in a cast-iron shell, was placed at a horizontal distance of 40 feet from the exploded charge, and was not detonated by sympathy. It was subsequently cracked open by a charge of half a pound of dynamite laid upon it when supported upon a rock in the air, and the charge (8 lbs.) was thus recovered quite uninjured. This experiment has been repeated several times, and in no case has the charge been fired. Charges of one pound of dynamite contained in tin cases were suspended at various distances from the great mine, and even when crushed at 80 feet, were not fired by sympathy. These experiments seem to prove that the danger of sympathetic explosion of mines charged with dynamite has been greatly exaggerated in Europe.

To obtain some precise data upon the manner in which the forces developed by a subaqueous explosion act upon a vessel, an old schooner was blown up last autumn at Willets Point. Her name was "Olive Branch"; length, 71 feet; tonnage, 60 tons. She was anchored in water 15 feet deep. Two torpedoes, each a beer-keg containing 50 pounds of mortar powder, were suspended 10 feet apart and 3 feet below her bottom amidships. They were submerged 7 feet. Six cameras were placed at a distance of about 500 feet, so arranged that by the aid of electricity instantaneous views could be taken at the pleasure of the operator. The time of explosion and of dropping each camera slide was electrically recorded on a field chronograph. The torpedoes were exploded simultaneously. A picture taken one-tenth of a second thereafter showed the bow and stern plunged in the water, and the middle of the vessel raised about 16 feet in the air. The masts were still vertical, and



water had reached a height of about 70 feet. The second picture, 1.5 seconds after the explosion, showed a column of water high, containing many fragments of the wreck. The third picture, 2.3 seconds after the explosion, showed the jet at its maximum height. The air was full of fragments, but apparently none begun to fall back to the water. The fourth picture, about 3.3 seconds after the explosion, exhibited a descending mist; the water again heavy splashes of fragments, and the site of the wreck shrouded in a mist of smoke. The fifth picture, taken a second later, showed only a mist of mist and smoke, with no evidences of violent action remaining.

The total destruction of the schooner had only consumed about 1.5 seconds, and the whole exhibition of power only about 4.5 seconds. The exceedingly short duration of the destructive action leaves no doubt that upon the mean and not upon the maximum intensity of the pressure, will the useful effect probably depend.

The purchase and storage at our forts of the material approved for the defense of our harbors has continued during the past year within the limits permitted by the limited appropriations granted by Congress.

It should be understood that large sums can now be judiciously expended, and that, in the present unsatisfactory condition of our heavy ordnance as presented in the reports of that department, the safety of our harbors may depend largely upon having a suitable supply available for immediate use.

#### RECOMMENDATIONS BY THE BOARD.

It is the duty of the board to again invite attention to the urgent need of increasing the number of enlisted men of the Battalion of Torpedoes sufficiently to enable them to properly perform the new duty assigned them by Congress of acting as a Torpedo Corps for the defense of the extended coast. The minimum force consistent with reasonable efficiency has been carefully estimated at 520 men, and the number now on duty is only about one-fourth of that figure. No increase in the organization nor in the number of officers is required. A provision, made by the President to recruit the companies to the standard now required by law, will supply the needful number. The duty is peculiarly technical than any other in the Army, and requires special instructions and special training; and the men are equally as available for other duties in an emergency as those enlisted in the other three arms of the service.

The board would renew its recommendation that a special appropriation be requested for preparing our forts for operating torpedoes. At the outbreak of hostilities it will be too late for this work to be properly done; the cost is small; the necessity is evident. An appropriation of \$100,000 would suffice to place many of the more important works in an efficient condition for this service.

The purchase of torpedo materials, and for instructing the engineer in the use of the same, and for continuing the trials designed to perfect the system, an appropriation of \$100,000 is recommended.

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#### RIVER AND HARBOR IMPROVEMENTS.

The construction, repair, preservation, and completion of certain public works on rivers and harbors, and the surveys and examinations connected therewith, have been prosecuted during the fiscal year ending

June 30, 1879, with the means provided by the river and harbor act approved June 18, 1878, and with the balances of previous appropriations remaining unexpended July 1, 1878, and available for objects therein specified.

Amount appropriated by act approved June 18, 1878.....	\$3,201,700 00
Balances of former appropriations applicable to continuation of work July 1, 1878.....	1,608,678 48
Amount appropriated by act approved March 3, 1879, exclusive of ap- propriations made for improvement of South Pass of the Mississippi River.....	7,094,100 00
	16,904,478 48
Amount expended, including outstanding liabilities, during fiscal year ending June 30, 1879 .....	6,132,301 95
Amount available July 1, 1879.....	10,772,176 53

The act of March 3, 1879, makes provision for 249 works of improvement in sums varying from \$1,000 to \$300,000; and for surveys and examinations with a view to improvements at 98 localities.

The appropriations contained in the above act, except in cases of emergency, were not made available for expenditure until July 29, when instructions were issued to the officers to proceed with the execution of all works the plans and projects for which had been previously approved. In the case of new works, examinations, investigations, and surveys were at once undertaken, upon the results of which depend the selection and determination of the proper projects for the works of improvement. In some cases, delays have arisen from the necessity of considering certain legal questions which must be settled before the money appropriated can be expended upon the sites.

The examinations and surveys required and provided for in the second and third sections of the act have been distributed and assigned to the officers in charge of the several river and harbor districts; and it is expected that, with few exceptions, reports may be received in time to be submitted during the ensuing session of Congress.

There is given below a brief summary for each improvement, showing its condition and progress made during the fiscal year, accompanied by a money statement setting forth the amount expended during the fiscal year; the amount available July 1, 1879; and, in compliance with the requirements of section 2 of the acts approved June 23, 1866, and March 2, 1867, "a full estimate for its [each work] entire and permanent completion, with the amount that can be profitably expended in the next fiscal year." For more detailed information in regard to each work attention is respectfully invited to the reports of the officers in charge, which will be found in the appendix.

The Board of Engineers constituted in July, 1878, to take into consideration the improvement of the low-water navigation of the Mississippi and Missouri Rivers entered upon the duties referred to in the last annual report, and made considerable progress in the surveys, examinations and investigations, preliminary to the preparation of a systematic plan of improvement, but in consequence of the creation of the Mississippi River Commission, in compliance with the act approved June 28, 1879, the Board of Engineers was, by your direction, on July 25, 1879, dissolved, and its secretary was directed to prepare, under instructions of Col. Z. B. Tower, Corps of Engineers, the information collected, with a view to its being turned over to the commission.

A preliminary report from this Board was transmitted to Congress in January last, as also a report with reference to the effect of a continu-

ous and permanent levee system on the Mississippi, below the mouth of the Ohio, upon the low-water navigation of the river, and its benefits in affording facilities to its commerce in high stage.

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**ESTIMATE FOR AMOUNT REQUIRED FOR MILITARY SURVEYS AND RECONNAISSANCES IN MILITARY DIVISIONS AND DEPARTMENTS.**

For military surveys, reconnaissances, and surveys of military reservations by the engineer officers attached to the various headquarters of military divisions and departments an average of \$5,000 for each of the nine military divisions and departments west of the Mississippi River, and \$5,000 for publication of maps; total, \$50,000.

**OFFICE OF THE CHIEF OF ENGINEERS.**

In the labors of the office the Chief of Engineers was assisted, on the 30th of June, by the following officers in charge of the several divisions:

**FIRST AND SECOND DIVISIONS.**—*Fortifications, battalion, and engineer depot, lands, armaments, personnel, &c.*, Maj. George H. Elliot.

**THIRD DIVISION.**—*River and harbor improvements, &c.*, Lieut. Col. John G. Parke.

**FOURTH AND FIFTH DIVISIONS.**—*Property accounts, estimates, funds, survey of the lakes and the Mississippi River, explorations, maps, instruments, &c.*, Capt. Henry M. Adams.

Very respectfully, your obedient servant,

H. G. WRIGHT,  
*Chief of Engineers, Brig. and Bvt. Major-General.*

Hon. GEORGE W. MCCRARY,  
*Secretary of War.*

**REPORT OF THE CHIEF SIGNAL-OFFICER.**

WAR DEPARTMENT,  
OFFICE OF THE CHIEF SIGNAL-OFFICER,  
*Washington, D. C., November 15, 1879.*

SIR: Fort Whipple has continued to be the military school of instruction and practice for the discipline and duties of the Signal Corps. The course embraces the drill and instruction in military signaling and telegraphy, meteorology, and the duties of the Signal Service at stations of observation and report, thus including those of the service on the sea-coast, and in the interior, together with those relating to the construction, maintenance, and operation of the now extensive telegraph lines connecting frontier settlements and military posts. The drills of the corps—with arms, with Gatling guns, in the maneuvering of field telegraphic trains, and the arrangements for the defense of them, the procedures for the rapid erection of telegraphic lines, the management of the signal and other apparatus habitually used by the corps in the field or in time of war—have been regular and thorough.

Particular attention has been given in the year just passed to the drill of the force with arms and to such armed maneuvers as would be necessary for the corps in time of war. A rigorous practice of this kind is required for a force organized to act—armed, if need be—independently of other organizations, and to be capable of protecting with its own guard its own material and works.

Experiments in signaling and telegraphy are made at Fort Whipple

under proper supervision. It is endeavored to keep up in all improvements with the progress made by scientific ingenuity in the special duties of the service, in the use of improved war material, and in the different modes of rapid communication now necessary and expected to be used, as of course, in war. With each ensuing year the duties of corps analogous in their service to the Signal Corps become more prominent, and hardly a month passes without some suggested improvement in telegraphic or signal apparatus, or in the methods of using them. Such are here tested as may have received the notice of this office, or to which attention is directed by higher authority. It is by following plans determined by tests had at this office and at Fort Whipple that the proper construction of the iron lines now so successfully used on the sea-coast and for the connection of posts, settlements, and stations on exposed frontiers and in the uninhabited interior has been arrived at. A practice line, 40 miles in length—a portable field-line being used—has been maintained, standing on the military reservation of the post for the experimental testing of the uses of the telephone, and for experiments had in reference to the working of the line itself when equipped with the ordinary telegraphic instruments. The telegraphic line connecting Fort Whipple with this office—a field line—has been in constant use, different forms of telephones being employed upon it. Telephonic communication is adopted as the usual mode for all communications between this office and Fort Whipple. The wires are so arranged and fitted with instruments that the ordinary modes of telegraphing may be used for any matters requiring to be of record. As a result of the experiments with telephones, telephonic communication has been established at points upon the sea-coast. Where connecting the life-saving stations, it has been used with fair success.

A series of experiments has been made with sun-flashes, with a view of improving upon the forms of heliograph to be adopted for the general uses of the Army. There have been other experiments, for which the post and the force stationed at it furnish, as they are intended to do, good facilities, as described in preceding reports.

The duties at this post are conducted under strict military rule. The post is controlled as connected with and as forming part of this office. The officers of the Signal Corps pass a course of drill and instruction, and serve regularly at this post before being put upon any other duty of the Signal Service. It is recommended that all officers of the Army intended to be instructed as acting signal-officers, or to be temporarily instructors in geographical military departments for the field duties of the Signal Service, be here instructed before being put upon detached duty. Instructors not themselves thoroughly instructed are worse than useless. It is aimed to furnish, through the thorough course of study and practice at Fort Whipple, a force of enlisted men, enlisted after examination, thoroughly disciplined as soldiers, and fitted by careful special instruction for the special duties of the Signal Service.

The importance of the field duties of the Signal Service, and of the modes of communication such services make possible, are now recognized throughout the world. The modes of instruction in field or outdoor signaling, now nearly similar in the Army and Navy of the United States, ought to be made so absolutely, and a course so complete established that any force of either arm will be surely competent at any time to put itself in signal communication with any other force either of its own or of the other arm within signal distance. It is not necessary now to represent at length to any who have served in or read of recent wars the propriety and the need that any armed force of any army should be able to wire

or to communicate by other signals with any other of the same nationality or obeying the same general command.

The habitual practice of the duties of field signaling and telegraphy ought to become a part of the regular exercises adopted for the militia forces of the different States. To a small extent this practice has been already entered upon in some of the States,

The course of instruction at Fort Whipple, for officers to be acting signal-officers, and that for enlisted men, candidates for promotion to the grade of sergeant in the Signal Corps or to the grades of first-class privates and corporals, are given herewith. (Paper 1.) They embrace such branches of study as experience has shown best suited to fit the pupil for the different positions of duty in which he may be placed. Papers 2 and 3 exhibit the names and number of officers instructed and the amount of field practice had by each.

One hundred and twenty-two enlisted men have been instructed for the position of assistants to observers. Of this number one hundred and two completed the course of instruction, drill, and practice, passed the necessary examination, and have been ordered to duty at stations as assistants. Two were discharged the service at their own request, five for cause upon the recommendation of the Chief Signal Officer, and thirteen are still under instruction. (Paper 4.)

Nine enlisted men have been instructed for promotion to the grade of sergeant. Of these, eight, successfully passing the examination, have been promoted and assigned to stations. One failed to pass the examination. (Paper 5.)

The action of Congress, in permanently organizing the enlisted force of the Signal Corps and increasing its number, has imposed additional labor upon the instructor.

The habitual drills with arms, at the post, of all the enlisted force stationed at the office of the Chief Signal Officer in Washington, in connection with the enlisted force at Fort Whipple, has rendered possible thorough practice during the year. Drills of the telegraphic train complete, embracing four sections, have been regularly established.

During the year ending June 30, 1879, First Lieut. R. P. Strong, acting signal-officer, has continued in charge of the post.

The duties of instruction have been under the immediate charge of the First Lieut. F. C. Grugan, acting signal-officer, who has also acted as A. A. Q. M. and A. C. S.

Acting Assistant Surgeon L. W. Ritchie has remained in charge of the hospital.

The post is in commendable good order. The buildings are sufficient in number, commodious, and comfortable. The health of the post has continued excellent.

A fire-engine is needed for the proper protection of the buildings and valuable property stored at the post.

The number of men at Fort Whipple for duty has varied during the year from one hundred and two to forty-one, and the number of officers from nine to three. The average number of enlisted men present during the year has been seventy-six.

The morning report of Fort Whipple, Va., for June 30, 1879, exhibits fifty-seven enlisted men present for duty, of whom five were sergeants, two were corporals, forty-eight were privates, one commissary sergeant, and one hospital steward. Of this force, twenty-eight privates were under instruction for the position of assistant on station.

In preceding reports the Chief Signal Officer has expressed his conviction that the economy assured to the United States by the duties prac-



ticed at this post far exceeded the annual cost of maintaining it. Longer experience confirms this view.

As stated in that report, this post alone has made it practicable to put on station duty and in charge of stations those non-commissioned officers and men only who have been drilled, taught, tried, and so known to be fit for the labors and responsibilities to be required of them. There is no one of its varied duties but to which the force of the Signal Corps can be here habituated in practice before being brought to face the difficulties of its actual discharge. The benefits resulting from the school as one of practice, in which men are trained to be at once soldiers and students, have been evidenced throughout the United States.

The enlisted men of the Signal Corps are engaged on duty as constant in time of peace as in the presence of actual war. The uses of the post at Fort Whipple for the discipline and instruction of the officers and enlisted men of the corps do not cease while either remain in the service. The force, made useful in time of peace by employment through which it is now admitted they return to the United States more than the cost of the service, is kept in readiness for any emergency of armed duty by regular drills, in which the officers and men stationed at this office and those whose changes of station bring them even temporarily within reach of Fort Whipple are there practiced and maneuvered as a part of accustomed duty. Men thus practiced are trained in discipline, and look upon events transpiring in their vicinity with soldierlike views.

The advantages of having distributed in the different cities of the United States a force of men with such training, habituated to acting in concert by order, and promptly; capable of reporting simultaneously by telegraph and in cipher, as a duty, upon matters of military interest to which their attention may be directed, aside from the routine duties of their station, have been sufficiently evidenced. The self-possession of the non-commissioned officers in charge of stations, their prompt, concise, and reliable reports, rapidly collected over great extents of territory, for the information of superior authorities, in emergencies which have occurred, have received the warm commendation of officers high in rank. The rapid making of reports of this character and the collection of them over the telegraphic wires, by aerial signals, or by other methods of communication, is the especial duty required in the service of the corps in time of war.

It is considered that the movements of the Army of the United States can be made by this agency as rapid on occasions of need as any of which there is record.

It is difficult to compute in money value the power of attaining such results. The advantages resulting to the War Department and to those especially charged with the management of the duties so varied and extensive as those of the Signal Service have become, from the knowledge that of all the force of the Signal Corps the course pursued leaves no man who, called upon for any duty of the service, would fail to be found fitted for it by careful instruction, are evident.

Meager reports only have been received of the instruction for the field duties of the Signal Service had elsewhere than at Fort Whipple.

The Chief Signal-Officer is confirmed in the view hitherto expressed that the general instruction of the Army to be successfully carried on should be confided to officers first carefully instructed themselves, and responsible to the Chief Signal-Officer for the discharge of their duties as instructors.

It is recommended that provision be made that a force of six subaltern officers may be constantly under instruction at Fort Whipple in the duties of field signaling and telegraphy, it being understood that as each



shall have completed the course and passed the necessary examinations he shall join his company and regiment; the number under tuition at the school of instruction to be kept constant by details to be made from companies and regiments, not before instructed, as vacancies occur.

The legislation of the act approved June 20, 1878, organizing the enlisted force of the Signal Corps, providing 150 sergeants, 30 corporals, and 270 privates, has been and will be productive of good results. It has done away with annoyances and embarrassments inevitable without it. It has fixed the service on an honorable footing, and opened a career, of which they are proud, to the best class of young American citizens. The applications for enlistment are numerous. The severe examinations are successfully undergone. The clause providing "that two sergeants may in each year be appointed to be second lieutenants" gives that stimulus of permanent service and promised reward so long and earnestly sought for. The success of this desired legislation is largely attributable to the steady and strong support of the Secretary of War.

Each year, however, since the passage of this act additional duties not then contemplated have been imposed by Congress upon the corps. In the present status of the service, employment can well be furnished to an additional force of enlisted men and be of such a nature as to certainly repay more than the money value of the expenditures incident to maintaining it.

A plan of details from regiments has provided temporarily for this increase of force. It would be better, however, if a permanent increase could be had.

The candidates for enlistment in the Signal Corps become year by year, as the service progresses and is approved, more numerous representative of the better educated classes of citizens.

The men to be enlisted are required to pass first a preliminary physical and educational examination before they are accepted for enlistment. After enlistment they are sent to Fort Whipple to be drilled and instructed. They are then tested by practice and further taught by a year of duty and study in the positions of assistants at stations. They are instructed later in higher branches at the school of instruction at Fort Whipple, and again examined and again tested by practice before being intrusted with the management of stations. They are held to a rigid observance of duty and with careful discipline at their several stations. The plan has furnished a force of soldiers of superior education and good character at the many stations throughout the United States. Their work is in evidence.

The work aggregating at this office has become each year more extensive. A field of operations actually coextensive with the northern hemisphere is now within its scope.

The details are many and complicated, each requiring to be elaborated for each day with the many checks necessary for accuracy, and each limited for its discharge to fixed and brief periods of time.

The organization of the service, improved by experience, has permitted each branch of duty to be carried on with regularity. The force on duty at this office, small in view of the onerous and extensive duties devolved upon it, has been at times, and necessarily, overworked.

The staff of the office since the date of the last annual report has been constituted as follows: First Lieuts. J. P. Story, H. H. C. Dunwoody, Robert Craig, C. E. Kilbourne, and H. W. Howgate, acting signal-officers and assistants, in charge, respectively, at different periods of records, correspondence, orders and enlistments; of the general charge of instruction, and general supervision of non-commissioned officers and assistants

on station duty; the receipt, record, and publication of daily weather reports, and of the property division.

Assistants, First Lieuts. J. P. Story, H. H. C. Dunwoody, Robert Craig, and C. E. Kilbourne, acting signal-officers, and Cleveland Abbe, A. M., have alternated, under the direction of the Chief Signal Officer, in immediate charge of the issue of cautionary signals, synopses, and indications, and the preparation of the publications of the office. First Lieut. A. W. Greeley, acting signal-officer, has also assisted in the work of these publications.

Lieut. W. E. Birkhimer, acting signal officer, has been in immediate charge of the telegraph room of the office and duties connected with the sea-coast lines.

First Lieuts. Robert Craig, J. McClellan, J. A. Buchanan and B. H. Gilman, and Second Lieut. C. A. Tingle, acting signal officers, have been at different times attached to the office as inspectors.

The Chief Signal-Officer refers with pleasure to the faithful services of these officers, as also of those serving at Fort Whipple and on detached duty elsewhere. The zeal and interest in the service manifested by the acting signal officers, as a class, have won success in the duties with which they have been charged.

The aggregate of office correspondence has become very large, embracing many thousands of communications, exclusive of telegrams sent and received. The record is herewith. (Paper 6.) While the office work has increased in magnitude, it has not changed markedly in character since the date of the last annual report. As then stated, the office is in communication with numerous foreign correspondents, having now official relations with the scientific men and the chiefs of meteorological services of nearly every prominent power in the northern hemisphere. It has become the acknowledged center for meteorological information on the continent; it has succeeded in connecting itself with the meteorological work of the world. It maintains a system of exchanges valuable and interesting at once to those who send and who receive, more extensive, prompt, and regular than would have been possible for the service without the aid of military organization for its members and the incident power of regulation and control which accompanies it. Co-operation wherever sought has been cordial and courteous.

The preparation of statistics and reports upon especial requests for the uses of individuals or institutions and journals which wish to publish data is a work of magnitude. The numerous applications for information on various subjects, many of them only indirectly connected with the duties of the office, require of themselves much attention. Requests for consolidated data or the discussion of meteorological facts, requiring in compliance days of labor, are made at times apparently without thought of how much has been asked for. It has been the rule of the office to furnish whatever has been in its power whenever it has been considered to be for the public benefit. Paper 7.

The work in the property division of the office is carefully systematized. It has become extensive with the increasing duties of the service. To meet, as it was hoped, the views of Congress, an economy almost parsimonious has been practiced. The shrinkage of values everywhere has permitted a reduction of outlays, without which the continuation of the work of the office in its present scope would, with the appropriations now available, have been impracticable. The management and the accounting for the sums appropriated for the official telegraphic lines of the United States, the uses of which are, by law, in part for commercial purposes, as well as for the especial duties of this office, and for the

conduct of military affairs, has become a work involving time, care, and responsibility.

A number of useful maps and charts have been prepared in the map-room of the office. The work of this room, offering, as it does, in synoptic view, and at a glance, the results had from thousands of observations extended over years of labor, and condensed, after careful consideration, into the lines of the charting, becomes yearly, with the lapse of time, more valuable for the studies daily necessary. A glance at the chart exhibits to the student what else could be known only by the personal experience of years. It is desirable to increase the force employed and the work of the room, systematizing, in this way, the series of generalizations established by the duties of the service. A number of clerks are constantly employed in the computations necessary to fix these generalizations. On the success of this duty will rest much of the permanent advance to be hoped for.

One hundred and seventy-one dollars and twelve cents have been received during the year ending June 30, 1879, from the sale of maps and other office publications, in accordance with the act of Congress approved March 3, 1874, authorizing such sale.

The many inquiries received at this office as to the manner in which the publications of the office may be procured indicate the want of a general knowledge of the fact that the sale of copies of any or all of its publications, or of any map or papers regularly issued by it, is authorized by law to be made to any applicant upon the payment of the actual cost to the United States of the paper or publication sought for. Valuable data of the office are always procurable in this way, for the study of any sufficiently interested in the subject to which the papers have reference, by paying the very moderate cost of paper and printing.

Five hundred and eighty-four meteorological instruments have been purchased for station use, and five hundred and forty-two have been issued during the year ending June 30, 1879.

The artisans' work in the instrument and repair shop of the office has steadily increased in amount with the increased distribution of instruments and the number of stations. A number of meteorological instruments, made after original designs, have been here manufactured, to be tested in the office as to their value for practical use or for the purposes of distribution.

The practice of sending instruments by mail, in the charge of postal agents, under the special arrangement for this purpose made with the Postmaster-General, has continued to be successful, and is of material benefit to the office. The superintendent of the railway mail service and his assistants of the Post-Office Department, as well as the agents of that department generally, have rendered careful and energetic aid in this transportation. Such aid is important to a service now ramifying into every portion of the United States.

It is by the aid of the postal agents and the facilities had through them for the conveyance of instruments over their routes that the wide distribution of meteorological apparatus, rendered necessary on seas and continents by the plans of observation and study now adopted, has become possible, and will be maintained.

A considerable number of instruments, anemometers, hygrometers, water-thermometers, rain-gauges, &c., have been issued to the Chief of the Bureau of Navigation of the Navy Department for use on vessels of the United States Navy in making, in co-operation with this office, the naval series of simultaneous observations directed by the honorable Secretary of the Navy in G. O. No. 220, dated December 25, 1876. This office supplies, upon proper application and receipt, any instruments re-



quired for this purpose. Reports of naval observations transmitted to this office are entered on the international bulletin and are charted upon the international weather charts.

A number of instruments have been furnished for temporary use on vessels of the commercial marine engaged in similar co-operation upon the marine series of observations.

The library of the office now contains four thousand one hundred and forty-nine bound volumes and eight hundred and twenty-two pamphlets, being an increase since the date of the last annual report of three hundred and twenty-eight bound volumes and eighty-two pamphlets.

These works have been carefully catalogued, and are filed for ready reference. The list comprises a useful and extensive collection for meteorological research, with other works relating to the several duties of the service. Copies of some of the volumes are not to be found elsewhere, and are especially valuable. A number of important works have been obtained, without cost to the United States, from foreign societies and associations, in courteous exchange for the publications of the office. (Paper 8.)

The total number of stations of observations in operation June 30th, 1879, within the territory of the United States and maintained for the Signal Service, was two hundred and twenty-nine, including those upon the telegraph lines in charge of this office, and the special river and sunset stations, from which reports are regularly received. Reports are also received from eighteen additional stations established by the authorities of the Dominion of Canada, also from one at St. John's, N. F., and one at York Factory, B. A. Telegraphic reports have been regularly received throughout the year from one and mail reports from two stations located in the West India Islands, and during a portion of the year telegraphic reports from five and mail reports from three others. The number of stations from which telegraphic reports are received at this office tri-daily is one hundred and thirty-three; the number from which one telegraphic report only is received daily is twenty-five, and from which two telegraphic reports are received daily is one; making the total number of separate points from which telegraphic reports are received daily one hundred and fifty-nine.

The sums expended for the service secure for the United States not only the reports from the officially established station, but incidentally those had from the additional stations, to which reference is made elsewhere.

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A portion of the meteorological statistics for the year ending June 30, 1879, as had from the regular reporting stations and collated, are given in detail in papers nine to sixteen.

One hundred and seventy-nine stations, including those upon the telegraph lines in the interior, in charge of the Signal Corps, have been inspected during the year ending June 30, 1879. Paper 17 shows the name of each station inspected, with the date of inspection. A number of officers are kept continually on duty as inspectors, and arriving at the stations without previous notice given, critically examine and report upon all facts in relation to it.

The instructions under which inspectors act and the character of the reports made by them are exhibited in paper 18, herewith.

The average cost of maintaining each full station of observation during the year ending June 30, 1879, exclusive of the cost of telegraphing reports and the pay and maintenance of the enlisted men on duty at each, has been \$389.90. A number of new stations have been established.

In the cost of each station, as here given, is included the cost of

of maintaining a suitable office or room at each place for the  
with facilities for the necessary exposure of instruments and  
play of cautionary signals when such signals are required.  
of the enlisted men at each station were fully described in  
annual report, as follows:

On forwarding telegraphic reports they are required to take,  
over, and furnish, to be telegraphed tri-daily on each day, at  
fixed times, the results of observations made at those times,  
including, in each case, the readings of the barometer, the ther-  
mo-meter, the wind velocity and direction, the rain-gauge, the relative  
humidity, the character, quality, and movement of upper and lower  
clouds, and the condition of the weather. These observations are taken  
three times a day, at the different stations, as to provide the three simulta-  
neous observations taken daily at three fixed moments of physical time  
throughout the whole extent of the territory of the United States. These  
observations were changed on November 1, 1870, at the hours 7.35 a. m., 4.35 p. m.,  
Washington mean time, were changed on November 1, 1879,  
at the hours 7 a. m., 3 p. m., and 11 p. m., Washington, mean time.  
The differences of time at the different stations cause it to happen that  
the observations are made in the earliest hours in the  
morning at others in the latest of the night. The work thus practi-  
cally, the differences of time at the different stations being taken  
into consideration, throughout the twenty-four hours. Each of these  
observations is required to be carefully recorded in writing, for future  
reference at the time it is taken. Three other observations to be taken  
at fixed times, 7 a. m., 2 p. m., and 9 p. m., at the different stations  
and recorded at each station. A seventh and especial observa-  
tion is taken and recorded at noon on each day. If at this observation  
any unusual changes are noted as to cause anxiety, the fact is to  
be reported to the central office at Washington.

This observation is required to be taken at the exact hour of  
each station. This observation, embracing the appearance of  
the sky, the direction of the wind, the amount of cloudiness—  
readings of the barometer, thermometer, and hygrometer, and  
of rain-fall since last preceding report, is reported with the  
report.

At stations at which cautionary signals are displayed an observer  
is constantly on duty to receive the order and to show the signal,  
and may be ordered at any moment. At stations from which river  
reports are furnished, an observation and record of the depth and tem-  
perature of the water is made and reported at a fixed hour on each day.  
In case of threatening storms or dangerous freshets, any station may  
be required to make hourly reports. In cases of violent storms,  
reports are sometimes required to be made hourly throughout the night.  
The data thus gathered on the files at each station are to be consoli-  
dated weekly, on forms which, with copies of the telegraphic cipher  
are to be sent weekly to the central office, then monthly, in the  
form of a careful digest, also to be forwarded. The thorough study of  
the form of the month is then to be condensed in the form of a monthly  
report after 19. None of these observations or records ought to be  
omitted; nor can they, with meteorological instruments as they  
are, be taken and recorded more economically. At stations where  
the station warrants it the duties of the enlisted men are increased  
to receipt and record of data from other stations, to be exhibited  
in the form of bulletins or furnished to the press for public use. In the  
report there are the further duties of the display, at the rooms of

the boards of trade, chambers of commerce, and other similar places, of symbol maps on which the meteoric conditions are shown by symbols, changeable daily.

There are to be prepared and posted also by the enlisted men, at these stations, bulletins of the storm-warning orders as received from the central office, on which appear very frequently, in addition to the order, brief notes as to the force of the anticipated storm, the direction in which it may be moving, the names of places menaced, though storm-signals may not yet have been ordered at them, and other items of information, all of which require to be carefully copied and posted with quick dispatch.

In cases of disasters occurring on the lakes or sea-coasts, full information concerning which is often in possession of the service, or in the instance of any matter of public interest coming within the scope of the duties of the service, the station force is required to exhibit bulletins containing in detail full reports.

The local offices of the Signal Service are always places of resort for inquiry on the part of those desiring to be informed what changes of weather have been particularly noticed, or are likely to affect the various industries in which the populations are engaged.

In the cities upon the sea-coast of the United States, or at the lake ports, the offices of the service are open for the comparison of instruments to obtain special instrumental readings; to make examinations of data, or to furnish whatever information may be practicable to captains of vessels or others concerned in shipping interests. At stations upon telegraphic lines in charge of or constructed by the service in pursuance and furtherance of its duties, the ordinary duties of telegraphing and the maintenance of the lines devolve upon the force there stationed, in addition to the duties of observation.

The cautionary signal flag is always, when flown officially, an invitation to mariners or others interested to visit the offices for information. The courtesies and duties of the office are not limited to the people of the United States alone, but are tendered freely to the people of any nation who may be within our borders.

The distribution of Farmers' Bulletins for the uses of agricultural populations has been frequently and is elsewhere described.

The forms exhibiting, condensed, the labor thus required of the Signal Service men stationed at separate stations, and the instructions under which the separate observations and reports are made, are herewith described. (Paper 20.)

In times of especial emergencies or danger of any kind threatening the separate States or the United States, the different stations make, by order and in cipher by telegraph, regular reports upon any subject under the attention of superior authorities.

The enlisted men in charge of stations are responsible for the care, cleanliness, and good-working of the instruments; the clearness of the records; the correctness and punctuality of the reports; display of signals or bulletins, and, in fine, for the conduct and good condition of the station itself. It has been considered necessary to make this description thus minute that it might be understood what duties are required of the non-commissioned officers and privates of the Signal Corps in addition to the military duties heretofore referred to, and that it may be comprehended that the force must consist of men of more than ordinary acquirements to be competent for such duties.

The sum of the pay and allowances of these soldiers comprehends every allowance which is permitted the soldier, to house, feed and clothe himself, to meet in full every expense of his maintenance wherever in



extent of the territories of the United States the vicissitudes of service may call him. It must be borne in mind that as a soldier he has no home, and that he must purchase anew, with every station, the little comforts which homes gather around them. His tour of duty permits service on each station for two years. These soldiers are liable to all a soldier's duties. On the occurrence of serious disturbances, the armed detachments of the corps are, as officers, in readiness, wherever they may be, for service at a moment's warning. In the service upon the frontier, they are exposed to the perils of the construction, repair, and maintenance of telegraph lines, and whenever they may accompany expeditions, to the dangers of

of dangerous pestilence these soldiers are by their duties exposed more than other forces of the Army. Other forces may be sent to places of comparative safety. The exigencies of the service and the need that regular series of data should be kept for observations, on which to base precautions against existing epidemics at the time, and for the study of them thereafter, have required that enlisted men of the service should remain faithfully at their posts during some of the worst visitations of disease which have devastated our country. As a rule they have done so without a murmur.

During the year just passed Sergeant H. Rohé, J. A. Cody, E. Van Dyk and W. U. Simons, and privates F. M. Neal, D. T. Flannery and J. A. Barry, U. S. A., remained bravely at their posts in the steady discharge of their allotted duties. The office files show no complaint on their part. It is a grateful duty to record such

men considered that as the United States have, as above recorded, the case of the body of men constituting the Signal Corps, by the services of a force trained and competent to act as armed men where there is need, there is in effect secured by the duties of other duties on which these men are employed, the benefits of all services rendered by the corps at stations of meteorological observation and report, at cautionary signal stations, at stations on telegraph lines, at sea-coast stations and elsewhere, with little compensation, or cost beyond that of any other merely military force, to the public.

It is a constant watchfulness for the whole territory of the United States, and a plan of observation and report extending by its branches around the northern hemisphere, is had through the Signal Corps of one hundred and fifty sergeants, thirty sergeants and two hundred and seventy privates.

It is well with such facts in view, and after nineteen years of experience, to reiterate the advantages secured to the Signal Service by its military organization. Service under military organizations is more effective than a permanent civil service of disciplined citizens in which the service is compulsory for the term of the service, and a proper discharge can be enforced by punishment. The experience of centuries has shown that whenever tasks covering in their reach the extent of public interest involving in their execution interests of life and property, have been undertaken, men have sought, as if by instinct, for faithful and prompt action through the regular control and sure discipline which attend the military system. The soldiers of the United States are simply its citizens, held under what ought to be laws and regulations to duties which they have voluntarily ac-

The duties of an army in time of peace have been defined as properly limited in their exercise to those of a police for the nation. It is considered that those rendered by the Signal Service have demonstrated that the men carried upon its rolls have been able to perform these duties and others requiring a higher standard of attainment, and rendering a better equivalent for the necessary cost. They have not failed to be ready to act armed upon any intimation that there was need of such readiness.

The duties of the force stationed at the office of the Chief Signal Officer, at the War Department, are many and onerous. In rendering these duties it ought to be borne in mind that they are continued day and night without cessation for holidays or days of rest. There is no single day of the year in which the work is suspended. It must of necessity and for this reason be performed by details of men who relieve each other at fixed times. The total force employed at this office numbers one hundred and nine enlisted men.

In estimating the numbers required to be present for duty, it is difficult to make a comparison between an establishment thus conducted and others in which the work is limited to certain hours of daylight only. This office is the center to which the daily and nightly, weekly and monthly contributions of all other offices or stations of the Signal Service scattered throughout the United States tend to be daily condensed, and finally elaborated and made of practical value. There are here concentrated, also, the reports from the six hundred and twenty-one places at which voluntary reports of daily observations are now made on this continent, and from the three hundred and twelve locations in foreign countries from which reports of daily simultaneous observations are had. From the great mass of data thus collected, and which enhances each year in value, are continuously elaborated the results which appear in the different issues of the office, whether in the form of forecasts telegraphed to the press throughout the country, of charts or bulletins distributed hence, of generalizations announced as apparent, of cautionary signal orders, or the weekly and monthly publications. No single report of any observation received at the office fails to receive attention or study.

It is at this office that are had the management and supervision of telegraphic lines, erected and now worked by the United States, upon the Indian frontier and in the States and Territories of the interior. The wires of the coast lines have here their terminal connection, and here concentrates the labor of the different coast stations. Upon this office devolves, and with each year to an increasing extent, the duty of transmission of many and important messages from superior authorities to and from distant posts and parts of the United States, for the safe delivery and proper guarding of which, by cipher, if need be, this office is responsible. The rooms of the telegraphic department are never closed or left without an operator. The brief narration possible in a report of this character can convey but little idea of the various and incessant labors incident to such an establishment.

A regular exchange of telegraphic reports now had for a number of years by comity of exchange with the chief meteorological office of the Dominion of Canada has been maintained. Meteorological reports of observations taken simultaneously, and furnished according to the form of this office, have been received tri-daily from twelve stations within the Dominion, and warnings have been regularly transmitted to the meteorological office of the Dominion at Toronto, as affording material on which to base the display of signals to be exhibited at ports of the

at times of threatening danger. The telegraphic reports of the Signal Service stations of the United States have been furnished tri-daily to the agent of the Dominion of New York. The relations thus maintained between the two services continue to be of service to both.

This office has been prepared to co-operate in this manner with the Signal Service office, and to the limit of its power, in the furnishing of reports for study, by the use of its consolidated reports or by special reports. It is not authorized by law to co-operate with any institution in the publication or display of any forecasts, indications, or signals not emanating from this bureau, or so controlled by the Signal Service as to conflict or confuse those hence issued for the Territories of the United States, the lakes, rivers, or coasts in or bordering upon them.

By the increased appropriation made available by the action of Congress at the last session, the series of telegraphic reports from the West Indies, extending from Cuba, by Jamaica, to Barbados, and the Windward Islands, have been partially resumed, two observations being had on each day from each station during the hurricane season. Constantly recurring difficulties in the collection of reports from these stations. The defective work of the telegraphic cables has frequently impaired the value of reports from them by delay. It is difficult to secure the services of observers or to obtain instrumental readings which at all accord with those at the regular stations. The crude reports are, however, at times of service.

The work of the Signal Service stations extends now on this continent to the Atlantic and Pacific coasts, and over the intervening territories of the United States. The work of the stations has been rendered more efficient by the daily provision of meteoric changes to occur over this geographical extent, including the great interior plateau. While the stations are in some districts far too widely separated, the gaps are being filled year by year with steady progress. The service now has its stations along the northern frontier of the United States from Maine to west of Lake Superior; along the Atlantic coast; along the southern or Gulf coast; along the southwestern boundary, from the United States from Mexico, to the Pacific ocean; thence along the Pacific coast to British North America, and at selected points throughout the whole interior within these boundary lines. A telegraphic line to follow, with near proximity, the line by which the United States, bound on British North America, from the Pacific to Lake Superior, mentioned in former reports as something wanting for and needed to properly complete the northern line of the Signal Service stations, may be considered as now nearly completed by the summer erected in the Northwest under appropriations by Congress.

It is probable that before the conclusion of another year a communication will exist along the northern frontier of the United States from the Atlantic ocean to the Pacific. This line forming the transcontinental line carried by the labor of the Signal Corps on this continent. As other and new telegraphic lines extend within the limits above referred to, they will make possible the establishment of other and much needed interior stations. The experience of the Signal Service in the matter of opening, equipping, and rapidly utilizing a system.

The meteorological work of the United States keeps pace everywhere with the telegraphic construction. In the hands, and under the management of a single corps, the two duties are necessarily co-extensive.

The following list exhibits the stations as classified and located in States and Territories on June 30, 1879:

*Alabama*.—Decatur\*, Mobile\*, Montgomery\*. *Alaska*.—Attu\*, Fort Saint Michaels\*, Atka\*, Saint Paul's Island\*, Unalashka\*. *Arizona*.—Apache Pass\$, Burkes\*, Fort Apache\*, Fort Goodwin\$, Florence\*, Fort Verde\*, Phoenix\*, Prescott\*, Fort Grant\*, Tres Alamos\$, Tucson\*, Wickenburg\*, Yuma\*. *Arkansas*.—Fort Smith\*\*, Helena\*\*, Little Rock\*\*. *British Columbia*.—Lyttont, New Westminster, Victoria†. *California*.—Colusa\*\*, Folsom City\*\*, Marysville\*\*, Orrville\*\*, Los Angeles\*, Red Bluff\*, Sacramento\*, San Diego\*, San Francisco\*, Visalia\*, Campo\*, Monterey, Santa Barbara†, Yreka†. *Colorado*.—Denver\*, Pike's Peak\*. Kit Carson†, Trinidad†. *Connecticut*.—New Haven\*, New London\*, Stonington†. *Dakota Territory*.—Bismarck\*, Deadwood\*, Fort Buford\*, Fort Meade\$, Knife River\$, Pembina\*, Yankton\*, Fort Stevenson\*. *Delaware*.—Lewes†. *District of Columbia*.—Washington\*. *Florida*.—Jacksonville\*, Key West\*, Pensacola†, Punta Rassa\*, Saint Marks\*. *Georgia*.—Atlanta\*, Augusta\*, Savannah\*, Tybee Island†. *Idaho Territory*.—Boise City\*. *Illinois*.—Cairo\*, Chicago\*, Warsaw\*\*. *Indiana*.—Evansville\*\*, Logansport†, Indianapolis\*. *Indian Territory*.—Fort Gibson\*, Fort Sill\*. *Iowa*.—Burlington†, Davenport\*, Dubuque\*, Keokuk\*, Des Moines\*, Le Claire\*\*, Muscatine\*\*. *Kansas*.—Dodge City\*, Emporia†, Leavenworth\*, Waterville†. *Kentucky*.—Louisville\*, Paducah\*\*. *Louisiana*.—New Orleans\*, Port Eads†, Shreveport\*. *Maine*.—Bangor†, Booth Bay†, Deer Isle†, Eastport\*, Portland\*, Rockland†. *Maryland*.—Baltimore\*. *Massachusetts*.—Boston\*, Chatham†, Highland Light†, Hyannis†, Gloucester†, Marblehead†, New Bedford†, Newburyport†, Springfield\*, Thatcher's Island\*, Wood's Holl\*. *Michigan*.—Alpena\*, Bay City†, Detroit\*, East Tawas†, Escanaba\*, Grand Haven\*, Forester†, Frankfort†, Ludington†, Marquette\*, Menomonee†, Mackinac City†, Monroe†, Muskegon†, Northport†, Pentwater†, Port Huron\*, Port Austin†, Roger's City†, Sault de Ste. Marie†, Saint Joseph†, South Haven†, Traverse City†. *Minnesota*.—Breckenridge\*, Duluth\*, Saint Paul\*, Wadena†. *Mississippi*.—Vicksburg\*. *Missouri*.—Boonville\*\*, Brunswick\*\*, Hermann\*\*, Jefferson City\*\*, Kansas City\*\*, Lexington\*, Saint Joseph\*, Saint Louis\*. *Montana Territory*.—Fort Custer†, Fort Keogh\*, Fort Ellis\$, Hunter's Springs\$, Little Missouri\$, Morgan and O'Brien's Ranch\$, Stillwaters\$, Virginia City\*. *Nebraska*.—North Platte\*, Omaha\*, Plattsmouth\*\*, Central City†, Sidney†. *Nevada*.—Austin†, Hamilton†, Pioche\*, Winnemucca\*. *New Hampshire*.—Mount Washington\*, Portsmouth†. *New Jersey*.—Atlantic City\*, Barnegat\*, Cape May\*, Little Egg Harbor†, Sandy Hook\*. *New York*.—Albany\*, Buffalo\*, Cape Vincent†, Charlotte†, City Island†, Dunkirk†, New York\*, Rochester\*, Oswego\*, Elmirat. *New Mexico*.—Albuquerque\*, Aleman\*, Bernalillo\$, Belen\$, La Mesilla\*, Los Lunas\$, Las Cruces\$, Santa Fé\*, Silver City\*, Fort Bayard\$, Socoro\*. *North Carolina*.—Cape Hatteras\*, Cape Lookout\*, Flying Station No. 5†, Flying Station at Sloop Point†, Fort Macon†, Kittyhawk\*, New River Inlet†, Portsmouth\*, Smithville†, Wilmington\*. *Ohio*.—Cincinnati\*, Cleveland\*, Columbus\*, Ashtabul†, Harbor†, Fairport†, Marietta\*\*, Sandusky\*, Toledo\*. *Ontario, Canada*.—Pembroke†. *Oregon*.—Albany\*\*, Eugene City\*\*, Portland\*, Roseburg\*, Umatilla\*. *Pennsylvania*.—Brownsville\*\*, Confluence\*\*, Freeport\*, New Geneva\*\*, Oil City\*\*, Erie\*, Philadelphia\*, Pittsburgh\*. *Rhode Island*.—Newport\*. *South Carolina*.—Charleston\*. *Tennessee*.—Chattanooga\*, Johnsonville\*, Knoxville\*, Memphis\*, Nashville\*. *Texas*.—

\* Stations of first class. † Sunset stations. ‡ Display stations only. § Repair stations. || Telegraph and sunset stations. ¶ Printing stations. \*\* Special river stations.



Beane\*, Brackettville\*, Brownsville\*, Cambridge\*, Castroville\*, Coleman City\*, Concho\*, Corsicana\*, Decatur\*, Denison\*, Eagle Pass\*, Eagle Springs\*, Edinburg\*, El Paso\*, Fort Davis\*, Fort Griffin\*, Fredericksburg\*, Grierson's Springs\*, Galveston\*, Graham\*, Henrietta\*, Indianola\*, Jacksboro\*, Laredo\*, Live Oaks\*, Mason\*, McKavett\*, Pilot Point\*, Rio Grande City\*, San Antonio\*, Santa Maria\*, Stockton\*, Eualde\*. *Utah Territory*.—Deep Creek†, Fillmore City†, Salt Lake City\*, Saint George†. *Vermont*.—Burlington\*. *Virginia*.—Cape Henry\*, Lynchburg\*, Norfolk\*. *West Virginia*.—Morgantown\*. *Washington Territory*.—Olympia\*. *Wisconsin*.—Green Bay†, Horn's Pier†, Kenosha†, Kewaunee†, Manitowoc†, Milwaukee\*, Madison\*, La Crosse\*, Racine†, Sheboygan†, Sturgeon Bay†. *Wyoming Territory*.—Cheyenne\*, Fort Fetterman†, Hat Creek†, Saint Mary's†.

Map 1 exhibits the location of stations and the extent of territory brought by them under constant observation for the purposes of study. The territory of the United States is not yet covered with stations as it ought to be, and valuable opportunities for study, which must be made good hereafter, and at an increased expense, are lost. The field of labor has increased greatly each year, as it has been learned how labor may be turned to the best benefit of different classes of citizens. The amount estimated as necessary to be appropriated for this service for the ensuing year, the sum of three hundred and seventy-five thousand dollars, can be wisely expended. The whole working force of the corps, four hundred and fifty men, will be constantly employed, and, in instances, overworked. The services of citizens, in addition, will be needed as in preceding years.

The reports of observations had in ceaseless succession from the stations already established, while daily and primarily employed in the studies needed for the daily issuing of forecasts and the display of cautionary signals, form also the basis for future work, to be of equal value with that made possible by the first use of them, and constitute a record, to increase in worth hereafter with every year for which it is continued.

The data already secured are worth to the country and to the world, even if the service had up to this time rendered no other return, all it has cost to obtain it.

From the moment at which it is made, each of the reports becomes to some extent complementary to all other reports had elsewhere. It is not possible to break this connection, nor in the present state of meteorological science ought any good report to be dispensed with.

It will be found, with the lapse of years, such observations have settled, by facts, questions hitherto treated by theory only.

It is upon the data now accumulating upon the files of this office and there daily compared, compiled, and treated with an accuracy each year increased by experience, and becoming more rigid as the office is warned, sometimes by notable inaccuracies elsewhere occurring, that the future studies of the climatology and meteorology of this continent will be based. It seems not impossible that upon the results of systems of observations here first established will be founded such studies for the northern hemisphere. It is not to the discredit of the United States that a work set on foot by them should render such ends possible.

The permanence, regularity, and accuracy of reports to be had from the West Indies ought to be secured. No system providing warnings for the Gulf or Atlantic coasts can be considered as complete or reliable without the means of continued reports of observation, to be made from these stations. It seems to be established that the great cyclones originating within the tropics rarely, if ever, reach any coast of the United

States without such indications of their existence and of their line of movement as well-managed stations among these islands would detect and announce. The possibility of protection will be increased and extended to more northern coasts whenever telegraphic communication can be had with the Bermuda Islands.

The attention of the office has continued to be directed, as in preceding years, to the solution of the difficult question as to the best mode by which to compare, for the purposes of the necessary daily studies, the observations of atmospheric changes taking place upon the Pacific coast, near the sea-level, and upon the great elevated plateau of the interior, with the reports of observations had at the same time on the eastern slope of the Rocky Mountains, and extended to the Gulf and Atlantic coasts at the sea-level. Progress is made in this direction. It is found not difficult to extend several of the office charts from the Pacific to the Atlantic coasts at the time of each tri-daily report, with the lines of the charting in so far accurate as to afford valuable suggestions as to the changes approaching.

The spread of civilization over the great interior plateau west of the Mississippi each year renders more extended observations practicable in that region.

The field of study has been pushed in that direction as rapidly as the means at the disposal of the office have permitted. The barometrical readings made in this section still lose part of their value by the difficulty of reduction to the hypothetical readings at sea-level. There seems, however, reason to hope that the unreduced readings can be utilized for purposes to which the reduced only have been hitherto applied. It is, perhaps, by multiplying stations and continuing the comparison of observations had at them, the correct solutions of all problems will be most rapidly attained.

The studies made this year in the matter of the hypothetical reductions to sea-level give reason to hope that processes have suggested themselves by which the hypothetical barometric readings referred to may be arrived at with sufficient accuracy for any practical purposes of meteorological charting.

The increased knowledge had enables improvements to be made each year in the modes of digesting the masses of observations received upon the records, and suggests each year better methods of study to attain the accuracy of prediction which is constantly sought.

It is in consideration to equip the station upon the summit of Pike's Peak, at an elevation of 14,150 feet, with instruments for the study of solar observations, and in particular of those to be made at sunset, to trace, if possible, what connection there may be between conditions then observed and meteorological changes which follow. Instruments for this purpose are now in preparation. In this work the office has had, and still has, the zealous co-operation of its distinguished co-laborer, J. Norman Lockyear, F. R. S. These series of observations will become more valuable with each year. It is to be hoped facts leading to important improvements in meteorological study will be established.

The long-felt need of carefully studying the changes occurring upon the interior plateau led to the establishment, prior to the date of the last annual report, of a series of observations had at what are known as "sunset" stations. This series has been continued during the year just passed with good results. The circular (paper 21) sufficiently describes the duties of the employed observers at these stations and the character of the report to be had from them. Some of these observations are roughly spectroscopic, the sunset report being based in part on such



different appearances of the sun and of the effects produced by its rays as are caused by their passage through differently-conditioned atmospheric media. It is one of the advantages that the necessary observations are so little complicated in their character that they may be taken at and reported from any point reached by the telegraphic wires. It seems probable that a simple form of spectroscope may be utilized for observations of this sort. Experiments are now in progress by which it is hoped that a form of that instrument suitable for the use of enlisted men may be arrived at. The reports are found of value in often-recurring instances in which they furnish some indication of the atmospheric changes in progress at points from which it has been impossible to obtain the full report of observation.

It has been established that a certain accuracy of forecasting the local weather changes to occur, at the respective stations, within a period of twenty-four hours has been acquired by the sergeants of the Signal Corps charged with the making of the sunset reports. These sergeants have the use of meteorological instruments and access to a portion of the data which pass their own stations on their way from other stations to this office. This accuracy has reached, as computed from the records on file, a maximum percentage of eighty-two and six-tenths for the regions west of the Mississippi Valley, where the weather conditions are notably constant, and eighty-one and six-tenths for the region east of the western bounds of that valley.

There can be no reason that any intelligent farmer, supplied with the necessary simple instruments, habituated to similar observations, and furnished with data, either in figures or condensed by charts, should fail to attain an equal accuracy.

Since the date of the last annual report the instrument known as the Weather Case or Farmers' Weather Indicator, has been thoroughly tested by prolonged trial. Reference is made, later in this report, to this instrument, which has been prepared with a view to its use by farmers generally.

The usefulness for meteorological purposes of the seacoast stations of the Signal Service, in connection with the life-saving service, and located at the life-saving service stations, has continued to be demonstrated.

As explained in earlier reports, the observations taken at these stations have the advantage of being taken on the seacoast itself near the sea level, and from positions which permit the condition of the sea-swell to be reported. The stations have the further advantage of being directly connected with this office by the telegraphic lines under its control. Reports of any character can so be had at any hour they may be called for, or signals may be displayed to warn of danger.

The facilities afforded by these lines admit of conversations even being had, as they frequently are, in reference to meteorological changes or other matters as, for instance, of the precautions to be taken against coming storms by those engaged in the salvage of wrecked ships, or other action in cases of shipwreck. The reports of observations had upon the seacoast itself, or upon the ocean beach, differ frequently and markedly from those had from stations farther in the interior, and suggest the approach of weather conditions which, without such indications, might either have escaped attention, or could not have been observed in time.

The generalizations had from the reports received from these stations become each year of increasing value for the prediction of the weather conditions to be expected near our coasts. The reports themselves, published in the daily journals, and so known to those interested, either at

the several ports or in the interior, give reliable information as to the circumstances under which coasting voyages may be taken or are being made. The benefits to follow a seacoast service, with its stations properly prepared and equipped are such as cause it to be hoped that all the exposed and frequented coasts of the United States may early have the advantage of such protection.

It is considered to have been demonstrated that by the services of single seacoast stations there has been saved, at different times, property amounting in value to more than the cost of manning and maintaining all the stations from the dates at which they were first put in operation. Improving modes of communication promise as possible such close connection between the stations that it seems practicable to so arrange that there need be no points upon our coasts but to which aid can be immediately summoned and none but from which summons for aid can go, if need be, to naval stations, posts, and cities.

Since the date of the last annual report the use at the seacoast stations of telegraphic gongs connected by wire, after the manner of those used for fire-alarms, and intended to be operated from any point upon the coast at which telegraphic communication exists, or may be temporarily established for the purpose of calling the attention of any stations, has been continued. Gongs to be operated in this way are located in the offices at Norfolk, Cape May, Thatcher's Island, Kittyhawk, and the central office, in this city.

The stations on the telegraphic lines, constructed in pursuance of acts of Congress on the Indian and Mexican frontiers and in the Northwest for the better protection of frontier populations, together with those for the purpose of connecting military posts and stations, serve better each year, the ends for which, in part, the lines were first recommended—that of extending the fields of meteorological study over regions so sparsely settled as to be almost beyond the limits of civilization.

They have made possible the daily receipt of meteorological data from regions in which the collection of such data had been before considered impracticable. They have furnished for the office a daily knowledge of the atmospheric conditions existing along the whole course of the wires. The value of these reports, completing as they now do both the southern and the northern lines of the whole system of reports established for the territory of the United States, is very great. The lines make practicable also the receipt at the regular telegraphic stations of reports from regions in the interior of the country near them which, both at the North and at the South, have been but recently explored, and from which every reported observation is of value. The near completion of lines similarly constructed and managed for similar purposes in proximity to, and following the general direction of, our northwestern frontier, from the station at Bismarck toward stations in Idaho and on the Pacific, foreshadows the best results for the interests of this especial service, and for the protection and development of that portion of our territory.

The events of the past year have illustrated what might be the uses of such lines in Indian wars. They make safer the settlement of the country. They make possible the establishment of stations valuable for meteorological reports.

Telegraphic reports from the eastern Mexican coast (the western coast of the Mexican Gulf) are still to be desired for the proper protection of the shipping in the Gulf and of the Gulf coasts of the United States. Cyclones moving over the West Indies, and thence pursuing a course over the Gulf of Mexico, would doubtless often manifest themselves on or near the coast of Mexico in time to permit warnings to be thence given



to our own. The regularity of the telegraphic communication now had over the government lines upon the Mexican frontier and in the State of Texas has established the fact that reports collected in Mexico along or near the Mexican coasts, and transmitted over wires working with fair success, could be concentrated at this office with sufficient rapidity.

The organization by the Mexican Government, under Señor Mariano Barcena, of a system of meteorological reports from stations extended over a great portion of the Mexican territory, and carefully conducted, renders the results of that work more valuable for this purpose than in any preceding year. It is to be hoped that arrangements may be early made by which these reports can be received by telegraph. The notices for the display of cautionary signals issued from this office could reach Mexican ports as well as our own.

It is to be hoped that the sums appropriated for the service and the co-operation of the Mexican Government will permit reports to be had from these coasts within the coming year.

The international meteorological work, based upon plans suggested by this office, and carrying into practical effect a proposition adopted at a congress of persons charged with meteorological duties, assembled at Vienna in 1873, "that it is desirable, with a view to their exchange, that at least one uniform observation, of such character as to be suited for the preparation of synoptic charts, be taken and recorded daily and simultaneously at as many stations as practicable throughout the world," has continued to give increased and satisfactory results. This work has now completed the fourth year of its progress.

With the approval of the Secretary of War, and with the courteous co-operation of scientists and chiefs of meteorological services representing the different countries, a record of observations taken daily, simultaneously with the observations taken throughout the United States and the adjacent islands, has been exchanged semi-monthly. These reports are to cover Algiers, Australasia, Austria, Belgium, China, Costa Rica, Denmark, France, Germany, Great Britain, Greece, Greenland, Iceland, India, Italy, Japan, Malta, Morocco, Mauritius, Mexico, Natal, The Netherlands, Norway, Portugal, Russia, Sierra Leone, South America, Spain, Sweden, Switzerland, Tunis, Turkey, Dominion of Canada and the Provinces, the United States, the Azore, Faroe, Madeira, Philippine Islands and the West Indies.

In this connection the office has to acknowledge the cordial and valuable co-operation of the meteorological services of the different countries, represented as follows:

Algiers, Morocco and Tunis, by Generals Teissier and Maritz, Commandants Supérieur du Génie en Algérie; Austria, by Prof. Dr. Julius Hann, Director of the Imperial and Royal Central Meteorological Institute at Vienna; Belgium, by J. C. Houzeau, Director of the Royal Observatory at Brussels; Great Britain, by the Meteorological Council of England, Wm. Smith Chairman, and Robert H. Scott, esq., F. R. S., Secretary; London, Alexander Buchan, M. A., F. R. S., E. Secretary of the Scottish Meteorological Society, Edinburgh, and the respective observers; Costa Rica, by Señor Federico Maison, Director of the Central Office of Statistics and Meteorology; Denmark, by Capt. N. Hoffmeyer, Director of the Royal Danish Meteorological Institute at Copenhagen; France, by the Meteorological Council and the Central Meteorological Bureau of France, Herve Magnon, President, Prof. E. Mascart, Director, Paris, and the respective observers; Germany, by Prof. Dr. Geo. Neumayer, Director of the German Marine Observatory, Hamburg; Greece, by Prof. Dr. J. F. Julius Schmidt, Director of the

Royal Observatory at Athens; India, by H. F. Blanford, Meteorological Reporter to the Government of India; Italy, by His Excellency the Minister of Public Instruction, and the respective observers; Japan, by I. Arai, Director of the Imperial Meteorological Observatory at Tokei, and the Imperial University of Tokei; Mexico, by Señor Mariano Barcena, Director of the Central Meteorological Observatory in the City of Mexico, and the respective observers; Netherlands, by Professor Buys Ballot, Director of the Royal Meteorological Institute of the Netherlands at Utrecht; Norway, by Professor H. Mohn, Director of the Royal Norwegian Meteorological Institute at Christiania; Portugal, by J. C. de Brito Capello, Director of the Meteorological Observatory of the Infante Don Luiz at Lisbon, and the respective observers; Russia, by Professor H. Wild, Director of the Imperial Central Physical Observatory of Russia at St. Petersburg; Spain, by Antonio Aguilar, Director of the Royal Observatory at Madrid, and the respective observers; Sweden, by Prof. R. Rubenson, Director of the Royal Swedish Meteorological Institute at Stockholm, and by Dr. H. H. Hildebrandsson, Director of the Meteorological Division of the Upsala Observatory; Switzerland, by Prof. R. Wolf, Director of the Observatory at Zurich, and by Prof. E. Plantamour, Director of the Observatory at Geneva; Turkey, by A. Coumbary, Effendi, Director of the Central Observatory at Constantinople, and by Prof. C. V. A. Van Dyck, Superintendent of the Lee Observatory at Beirut; Canada, by Prof. G. T. Kingston, Director of the Magnetic Observatory at Toronto, and Superintendent of the Meteorological Office of the Dominion of Canada, and the respective observers; the United States Navy, by the Navy Department, through Commodore W. D. Whiting, U. S. N., Chief of the Bureau of Navigation; and by individual observers at other points.

A number of observations taken on vessels at sea to complement the simultaneous reports of this service, and at the request of this office, have been received on the form provided for the purpose. (Paper 22.) The vessels furnishing their reports belong to the commercial marines of different nations. The utility of the reports is evident in the study of storms approaching our coasts or which endanger vessels sailing from our ports.

The co-operation of the Navy of the United States in the taking of observations simultaneously and in accordance with the system adopted at this office wherever naval vessels of the United States may be, as established by the general order of the Secretary of the Navy, dated December, 25, 1876, has largely increased the data of this class. This co-operation has been skillfully rendered by the Navy Department and the United States Navy, through the commanders and officers of vessels, and the Chief of the Bureau of Navigation.

The people of the United States are thus the first nation whose Army and Navy co-operate, as all armies and navies should, under official orders, in the taking of simultaneous observations wherever the forces may be. This co-operation has now existed for nearly three years.

In view of the accomplished establishment of the system of simultaneous reports to be recorded and made at sea by the vessels of the naval and commercial marines of the United States and of other nations, and to provide for the extension of the system, carefully tested barometers of the best make have been prepared and kept located, as standards, at the ports of New York and San Francisco. These instruments have now been in use for reference; that at New York since 1877, that at San Francisco since December 1, 1878.

These barometers are publicly located and displayed to afford means



for comparison of the ships' barometers of the shipping of all nations. The instruments, while carefully guarded, are easily accessible. Public notice is given of the location of them, and a sergeant of the Signal Corps attends daily to give information and to take charge of any ship's barometer which may be brought for comparison. (Paper 23.)

The standard barometer for the use of shipping in the Atlantic Ocean is located at the Maritime Exchange, in New York City; the standard barometer for the use of shipping in the Pacific Ocean is located at the Merchants' Exchange, in the city of San Francisco. During the year just past the uses of these instruments have become more and more appreciated, and frequent applications are made by the commanding officers of foreign vessels, as well as by the shipping of the United States, for the comparison with the standard of the barometers carried by their vessels. The sergeant in charge of the duty of comparison at New York states that not unfrequently barometers are brought to him for rectification which have neither been compared nor adjusted since the time at which they had been placed upon the vessels by which they were carried, and that errors of half an inch in the reading are frequently found. The barometers are carefully put in good condition before they are returned to their owners. No charge is made under any circumstances for any part of the important work thus undertaken by the service.

The officers of the Signal Service located at the different cities and ports of the United States and upon the sea-coast offer every facility and aid in their power to the vessels of any nation.

With the plans for charting now adopted at this office, and with the reports now received here, it appears that the meteoric changes occurring over a great portion of the continents north of the equator can be charted with an accuracy sufficient to permit careful and valuable study. This charting, to be of the best attainable value, must be supplemented from the records of observations had on the seas. A ship at sea becomes one of the best of stations for a simultaneous system. The value of the record is enhanced by the change of the ship's location during each period of interval occurring between the separate simultaneous observations. Thus, a vessel making three simultaneous observations, daily, on any given route, answers, for the meteorological study extending over that route, the purpose of three separate stations. There is no sea-going vessel but which carries human life, and each ought to carry, by compulsion, if need be, meteorological instruments. The smallest craft, in caring for its own safety, may use them enough to add to the value of the most extensive record. There is no nation without interest in the work proposed to be based upon exchanged simultaneous reports, and none has hitherto hesitated, when the subject has been properly presented, to aid in a duty which, so easily done as to require very little effort on the part of any person, has for its object a good to mankind. The work cannot, from its nature, be for the selfish good of any section.

A number of the great steamship companies, foreign and domestic, operating the principal commercial sea-routes, give their powerful influence and aid.

The office has the co-operation of the Pacific Mail Steamship Company, through its agents, Williams, Blanchard & Co.; the White Star Line, through its agents, Ismay, Imrie & Co., Liverpool, and R. J. Curtis, New York; the Occidental and Oriental Steamship Company, through its president, George H. Bradbury; the North German Lloyd, through its agents, A. Schumacher & Co.; the American Steamship Company, through its president, H. D. Welsh; the Red Star Line, through its presi-

dent, James A. Wright; and the Allan Line, through its agents, A. Schumacher & Co.

The United States bear, in the cases of all maritime observers co-operating in this system, all expenses for forms, postages, &c., when so desired, and not infrequently, and, when necessary, loan the required instruments.

The number of observations made daily on separate vessels at sea is one hundred and twenty-two. (Paper 24.)

Research has already gone far enough to indicate the paths by which, if it cannot be directly predicted, it can at least be studied, to learn what sequences to follow conditions reported on or near the eastern coast of Asia, or on the Pacific, will be found on our western coasts.

Similar studies will have reference to our own southern and eastern coasts, and to the western coasts of the European continent. The time cannot be far distant when vessels leaving any Atlantic port may be informed whether any notable disturbance exists at sea and when it is likely to threaten the voyage.

The establishment of permanent ocean stations in lines traversing the ocean over or near the telegraphic cables, and in telegraphic communication with either continent, is not considered impracticable and has been referred to in preceding reports.

Since the date of the last annual report this matter has been especially illustrated in the instance of the cable-laying steamship *Faraday*, while engaged in laying an electric cable between France and the United States, and holding on to the cable, found herself in the course of a cyclone which passed directly over the vessel without causing her to lose her hold of the cable, and which was at once reported by telegraph through the cable from the vessel to the European continent, the report stating wind changes and velocity, and the barometric changes occurring as the different quadrants of the cyclone passed over the vessel. The practical demonstration seems complete.

There is reason to hope that a progress has been made which will eliminate from the study of practical international meteorology some of the difficulties hitherto encountered.

There are grounds to hope also that the atmospheric conditions and changes of condition can be charted with sufficient accuracy over any extent of the earth's surface. If the hope has fruition, meteorological barriers will, as against study, cease to exist.

On July 1, 1875, the daily issue of a printed bulletin, exhibiting the international simultaneous reports, was commenced at this office, and has been since maintained. A copy of this bulletin is furnished, without charge, to each co-operating observer. The results to be had from the reports thus collated are considered to be of especial importance. The bulletin combines, for the first time of which there is record, the labors of the nations in a work of this kind for their mutual benefit. There is needed only the assistance to be had from the naval forces of the different powers (that of the navies of the United States, of Portugal and of France being already given) to extend the plan of report upon the seas to bring more fully within the scope of study observations practically extending around the northern hemisphere.

A copy of the International Bulletin herewith (Paper 25) exhibits the character of the international reports, and that of the information had from each station. The chart accompanying this bulletin shows as nearly as practicable the location of the stations, and foreshadows the studies the reports had from them will make practicable. The number of stations reporting increases.



the stations are crowded in some localities, each is useful—  
ing to check the work of the other, and each aiding to close  
the failure of other stations might sometimes cause. The work  
ly to be abandoned by those in the different countries who have  
rt in establishing it and who share its benefits. If it served  
purpose than to maintain, as it does, the pleasant co-operation  
charged with the meteorological duties of the different coun-  
ould be of value. It is hoped that by systems of observations  
nsive, generalizations may be had to permit the announcement  
ic changes for periods longer in advance than have been hith-  
licable.

average number of daily simultaneous observations now made in  
ountries is three hundred and fifty-seven. The total number of  
on land and on vessels at sea from which reports are entered in  
tin regularly is five hundred and twenty-seven. The co-opera-  
e different nations secured by this plan of exchange has ren-  
additional cost to the United States of the grand system of  
t makes possible but little more than that of the cost of the  
on, paper, and binding of the International Bulletin and the  
ying charts, a cost which would have to be met in great part  
proper preservation of the records themselves even if the bulle-  
not distributed.

r 1, 1878, it became possible to commence the issue, on that date,  
y international weather map, charted daily and issued daily,  
t based upon the data appearing upon the International Bul-  
simultaneous reports of similar date. The charting extends  
e world, and embraces for its area the whole northern hemis-

ily issue of a chart of his kind, thus daily issued for the first  
he United States, was without a precedent in history. It ex-  
he co-operation, for a single purpose, of the civilized powers of  
l north of the equator.

udies which such charts make possible, the improvements which  
s to the charts as the work progresses and the area of the chart  
filled with reports of observations carefully elaborated, are ap-  
by scientific men. The questions as to the translation of storms  
inent to continent, and of the times and directions they may  
uch movements; the movement of areas of high and low ba-  
the conditions of temperature, pressure, and wind-direction  
around the earth at a fixed instant of time; the distribution  
unt of rain-fall, and other studies, many and valuable, only sug-  
y this enumeration, may be by such studies settled. It seems  
ssible that in the future questions of climatology, and perhaps  
earing upon the prediction of weather changes far in advance  
ne at which these changes may happen, or queries as to the  
c of coming seasons even, may be answered by the researches  
arts will make practicable.

ry great aid the material furnished in this elaborate form gives to  
h for generalizations, or for data in the support of theories, has  
ore referred to. In frequent cases, little more than collation is

7.  
means of better combining the work and the interests of the  
ations, of certainly securing that co-operation at sea which will  
e lines of the charting to be drawn as fully and as well over  
s over continents, and which will give the world ultimately a  
ge as practical of the movement of areas of disturbance in the

midst of the seas as is now had of such movement on some continents, the undertaking is of much importance.

It is an advantage of the charting draughted from simultaneous reports that studies by normals, not possible in any other way, may be had. The normal pressure, temperature, &c., arrived at from observations taken at any one place, and the same and a fixed instant of time every day, become established as to that place and time with accuracy. Many causes of error are eliminated.

The intercomparison of these normals with the normals taken at other places simultaneously with the first and under the similar conditions that the normals to be found for those places are to be from observations taken at those places at a fixed time and on every day, gives results reliable and differing from those to be had by the use of normal readings arrived at in any other manner. Normals for the year, for the season, and for the month may be determined by such procedure. The comparison of such normals will show in the case of abnormal changes in any district or section whether and how these changes are compensated by compensating variations elsewhere. There are interesting studies as to what sequences there may be to follow such atmospheric variations occurring over any region or country—either in that region or country or elsewhere—and how and where the compensating variations occur, and with what concomitants or sequences of meteoric changes.

There is the hope to gain in this way or by studies such study will suggest information to affect the commercial and agricultural interests of the world.

By observations spoken of as simultaneous observations, there is meant, in the parlance of this office, observations actually taken simultaneously in reference to physical time. The readings for observations of this character, made at different stations, no matter how widely separated, are attempted to be so made that they will be in effect made together; that is, that the different observers at the different stations will each be at his separate instruments, reading them for the observation at the same moment that each and all of the other observers are at their separate instruments for the purpose of making the same observations.

In the case, for instance, of an observation or series of observations to be made at Tokio, San Francisco, New York, London, St. Petersburg, and Calcutta, the observers at each of the stations named—and the list might be prolonged indefinitely—are so instructed that at each station, and at the moment fixed for the observation, an observer would be found at the instruments taking the proper readings. So rigidly is this plan followed throughout the United States, that not only are the instruments required to be read at the different stations at that moment of physical time which has been fixed for all, but the instruments are required to be read in a certain and fixed order or sequence.

The observations are thus made, in fact, simultaneously, precisely as if—in a supposable case—the different sets of instruments, instead of being scattered over the surface of the earth, had been gathered in a single room, and the observers then directed to read the different sets together, and at once, at a fixed moment of time. Observations of this character have no resemblance to those made at similar hours named, by local or clock time, at the different stations. Observations taken at similar hours of the local or clock time, at different stations, are, in effect, taken at very different hours of physical time, the differences increasing with the number of degrees of longitude intervening between the different stations. Thus, observations taken at Washington and San Francisco at the similar hours, 7 a. m., 2 p. m., and 9 p. m. of local time

cities, would in fact be taken at Washington three hours and before the same observations would be taken at San Francisco. Observations of this character might very properly be styled local, for they are so as to local time; they are not in any way simultaneous. The distinction ought to be very carefully made. Much has entered meteorological writings because this distinction has been rigidly observed. In some of the earliest works having to do with practical meteorology, there is mention of chartings based upon observations taken "simultaneously" at different stations, at 3 p. m. per hour fixed by local time. The use of the words "simultaneous" and "synchronous" as synonyms is not yet abandoned.

With the introduction of the electric telegraph it was difficult to concentrate observations to be taken simultaneously, and to be concentrated with sufficient rapidity for use for any practical purpose. On the very early days it was then possible to consider, for study, observations taken at the same hour of local time presented themselves in appearance as simultaneous. It seems to have fallen to this office to first arrange for purposes of forecast, systems of observation based upon the fact that the observations were to be actually taken simultaneously, and the first so arranged telegraphic circuits connecting the different stations that the observations taken simultaneously should move directly by wire to a given center—the central office. It is by means of these observations only that a true synopsis of the atmosphere over the extent of the earth's surface can be given; the atmosphere being mapped, as it were, before any changes in its condition can have taken place by motion. It is a peculiarity of such charting that it is unimproved to its extent, and improves for any purposes of meteorological study the greater the extent given to it.

Comparison of charts covering the same surfaces and based upon simultaneous observations is easy, and when, for close study, the charts are made to follow each other in regular sequence, the observations taken at times so fixed as to divide the daily twenty-four hours into equal periods of time, they offer advantages which it is not possible to obtain by any other process. It is charts of this description which are the basis of the world-wide study possible, and with which will be attained in the future results, up to this time, only but faintly foreshadowed.

The work of this office is based almost wholly on observations of this kind. The office series of simultaneous observations has run continuously from November, 1870. It is through observations of this kind that the concurrence of the nations has been invited for the preparation of the charts hoped to be extended until they cover the world. The date of the last annual report additional international charts were added to the series of charts. These charts are, like those previously referred to, charts of the whole northern hemisphere, and are designed to exhibit with close approximate correctness the geographical features of the earth and water surfaces in that hemisphere to each other. They display, condensed by months, the means of barometric pressure, of wind-direction and force, the means of temperature, and the general course of movement of areas of low barometer for each month. These charts are based almost wholly upon the international service of reports taken simultaneously.

The circulation given these charts in the Monthly Review, to which they are now an accompaniment, offers this world-work to many nations. It completes for the present the series of charts, to form which the service of the international service were at first undertaken, and which are now to study a field of research very nearly co-extensive with the world.

the northern hemisphere. A series of charts for the especial studies of storm-tracks are prepared as an established office series. On such charts are traced ocean storm-tracks, these tracks being charted primarily over this continent by the regular reports at this office and at sea and on other continents, by such meteorological reports as may be had from the sea and the distant continents, together with such other information as may be collected at this office up to the dates at which the several charts issue. The construction is continuous from month to month, a storm-track commencing in one month appearing on and being continued on the charts issued for the next succeeding month, the portion of the track continued in this latter month being located by such supplementary information as may have been collected up to the date of the last issue. Thus for each succeeding month.

Examples of these charts are found accompanying the issues of the Monthly Review, in their sequence.

A second meteorological congress was held at Rome, Italy, in April last. At this assembly the practical use of observations taken simultaneously, upon which use the system of this office has rested for studies and for charts for a number of years, was encouraged.

The collection of material for maps, to cover large portions of the earth's surface—interesting, by the gratuitous distribution of copies of the work of the office, to all who should, by forwarding data or material, become regular co-laborers in the office work, as has been long the usage in this country—was commended for general adoption. The daily and wide distribution of the International Bulletin and international charts is for this purpose.

The publications of the office, The Weather Review, were mentioned as models of work to be desired in Europe.

It was urged upon the United States to furnish full systems of reports from the stations on Pike's Peak and Mount Washington.

These evidences of appreciation are grateful. They go far to assure the friendly co-operation of the nations to perfect a world-wide meteorology.

The total number of daily reports, of all kinds, now received and filed at the office of the Chief Signal-Officer, is as follows: Number of daily service telegraphic reports, four hundred and forty-nine; number of international daily simultaneous reports, three hundred and twelve; number of reports from voluntary observers, four hundred and sixty-seven; number of reports received from the Medical Corps of the Army, one hundred and twenty-three; number of reports received from United States naval observers, thirty-one; making a total of one thousand three hundred and eighty-eight reports received regularly for discussion.

Paper 26 exhibits a list of the military posts from which meteorological reports have been regularly received at this office during the year.

A list of the voluntary observers who have furnished monthly meteorological reports to this office during the year ending June 30, 1879, is exhibited in paper 27.

As described in previous annual reports, the daily official deductions or forecasts issuing from the office of the Chief Signal-Officer and constituting the tri-daily Synopses and Indications (as they are styled), and the especial deductions, in pursuance of which the orders for the display of cautionary signals at stations are given when necessary, are based upon the regular reports of the service stations of observation, transmitted tri-daily to this office by telegraph, after passing over a system of telegraphic circuits so arranged as to at once concentrate the reports at this office, and to distribute in doing so certain numbers of them at designated cities and stations. Especial reports are demanded from any

number of stations, whenever additional information is required to impending disturbances. The synopses are those of the meteorological conditions existing over and near the United States for each period of twenty-four hours terminating at the hour for each general report. The synopses are announcements of the changes, considered from the study of the reports, in connection with such rules and generalizations as the result of this office and the study of meteorologists seems to have warranted to be indicated as to happen within the twenty-four hours next ensuing. The study for each issue requires the draughting and compilation of eight charts, these charts exhibiting chartographic data furnished by the simultaneous reports of the stations are referred to, and located in the United States, on the Atlantic and Pacific coasts, on the coasts of the Gulf of Mexico and of the lakes, in the eastern interior, and in the Dominion of Canada, Nova Scotia, New Brunswick, and the West India Islands. The charts used in this office for charting differ from any other. They are based upon the study of observations actually taken simultaneously. The charts are as follows: (Map 2.) (a.) A chart of barometric pressure in relation to the temperature of freezing and sea-level; of temperatures of winds, together with the wind-directions and the velocities at the different stations; the amount, but not the nature, of the cloud formations at the different stations; the character of the precipitation, if any, falling at the time of the reports; and the amount of precipitation, since the time of the last preceding report. This chart exhibits isobaric pressures and the temperatures noted at stations in their respective districts of territory and to each other, by a system of isobaric and thermal lines inscribed. The isobars are charted for inches of inches of barometric pressure; the isothermals for temperatures represented by the multiples of  $10^{\circ}$ . The wind-directions are indicated by arrows at the different stations. (Map 3.) (b.) A chart of the humidities appearing to exist over territorial districts, with temperatures at the different stations in relation to districts and to each other. The chart of humidities enables studies to be made in relation to territorial sections, the difficulties attending the study of conditions of this character being obviated to a very considerable extent by the inter-correction of stations among themselves and by the extent of the regions over which the readings are made simultaneously in fields so great purely local conditions in part disappear, or vary slightly the general result. This chart contains also the character of the amount of the lower clouds, and the character, amount, and direction of the upper clouds, when these are visible. On this chart are also inscribed lines of equal relative humidity, and isothermals are also as described in chart a. (Map 4.) (c.) A chart of the clouds prevailing over the United States, in which the character of the different varieties of clouds and their amount, as viewed from each station, are represented graphically by appropriate symbols. On this chart also appears the weather as reported at each station at the time of each report by symbols; the stations at which rain has fallen since the preceding report, as well as the direction of movement of the upper and lower clouds, and on it each morning there are entered the minimum temperatures noted during the preceding night at the different stations at the local times synchronous with the hour of 11 o'clock Washington mean time, and lines of minimum temperature are also inscribed to exhibit these temperatures in relation to districts of territory. On this map are entered also the maximum velocities of the wind at particular stations when required to be specially reported at intervals between the hours of regular report. The cloud-areas



appearing on this map are surrounded by an outline charted to enable the extent and probable movement of these areas to be considered. There also appears on the copy of this chart, made at the hour of the midnight report, the appearance of the sunset at each station, as reported by the observer at that station, and as considered by him to indicate, when taken in connection with the appearance of the western sky at sunset, the character of the weather to be anticipated at that station for the twenty-four hours next ensuing. (Map 5.) (d.) a chart of normal pressures and variations from normal pressures for each eight hours. There have been computed during the past year, at this office, the means of the observed pressures recorded at each station, at each of the hours at which observations are made at that station, for the regular simultaneous telegraphic reports for each monthly period. The series of observations used in computing these means has been for as many years as was possible at each station. These mean pressures are the mean pressures computed from the actual readings had at each station, at the habitual hour of observation, for each of the tri-daily full telegraphic reports required to be made from that station, and obtained, as explained above, by reducing the readings then made to a uniform temperature—freezing—and correcting for instrumental error (variation from the standard) only. Mean pressures so obtained are styled in this office “normal pressures” for the station, for its local hour of the report and for the month. On this chart is entered at each station, with the symbol + or —, the value by which the actual reading reported from that station at the hour of any report is above or below the “normal pressure” for that station for the hour of that telegraphic report and for that month. These deviations from such normal pressures may be styled “departures” from the normal pressure; the comparison of these departures for each period of eight hours shows what changes have taken place in the atmospheric pressure at the different stations, in each period of eight hours, after eliminating the horary variations of pressure. On the chart are traced lines of “no variation” in normal pressures, being the lines along which the pressures are at the time practically normal, and also lines of “departure” from the normal pressure for each one-tenth of an inch of mercury, by which the actual readings as reported are found to be above or below the computed normal. Such lines are traced for each period of eight and of twenty-four hours. This method of noting barometric pressures enables those taken and reported simultaneously from any number of different stations to be considered for purposes of study in relation to each other without reference in each case to be local questions of altitude, horary variations of pressure, or other disturbing causes at the places at which they may be taken. This chart exhibits also the normal pressure for the month at the station, and the wind-direction as given at the hour of the daily report. (Map 6.) (e.) A chart of actual barometric variations. This chart exhibits the observed readings of the barometer at different stations, corrected for instrumental error [variation from the standard at Washington] and for temperature, the mercury reduced to the temperature of freezing, but not reduced to the hypothetical readings at sea-level. In this office, observed readings so treated are known as the “actual readings.” On this chart are traced lines of “no variation,” showing the lines along which no change in actual pressure has occurred for the periods of eight and twenty-four hours, respectively, preceding the hours of report, and also lines showing the lines of rises or falls of the actual readings of the barometer for each one-tenth of an inch and for the same respective periods. This chart is valuable as exhibiting the nature and extent of actual barometric pressures, and the changes of such pressures, taking place at the different



tations, and over the different territorial districts. (Map 7.) (f.) A chart of dew-point variations. On this chart there are entered the values of the changes of the dew-point at the several stations for the periods of eight and twenty-four hours preceding the hours of report; there are traced also lines along which there has been "no variation" in dew-point during such periods respectively, and lines showing the rises and falls for each five degrees in the dew-point for the same periods. (Map 8.) (g.) A chart of dew-points, vapor tensions, and actual humidity. On this chart are entered the values of the dew-point at the different stations, and lines of equal dew-point are traced for each ten degrees difference of the dew-point readings. At the extremities of these lines are noted the values of vapor tensions and actual humidity, corresponding to the given dew-point lines. The examination of the charts *f* and *g* enables the hygrometric conditions of the air and the changes in such conditions which have occurred within the periods of eight and twenty-four hours, respectively, to be considered in so far as these are indicated by the wet and dry-bulb psychrometers at the different stations.

During the past year there has been prepared in the map room of the office, and to be used in connection with the studies to be had from the maps above enumerated, a colored contoured map. This map exhibits, by colored surfaces of different colors—each colored surface being bounded by contour lines—the elevations of the different terrestrial surfaces on which the stations of the Signal Service are situated, and the map exhibits as a whole the relations as to elevation of all the surfaces within the United States, Mexico, and the Dominion of Canada, over which the work of the office extends. The direction of movement of atmospheric areas may, by the study of this map, be judged of to some extent by considering the contours of the earth's surfaces over which such areas are found charted, and towards which they are thought likely to move. The linear charting has been based upon data had from Gannett's linear contour map of 1877, and from Guyot's Wall Atlas of 1863. A chart embodying additional data is now in preparation.

Several series of computations have been made in the computing-room of the office to enable additional charts each to exhibit in the lines of its charting the condensed data in their relation to each other. The regular series of computations has been continued.

The number of separate graphic chartings made and examined in the study-room, for the purpose of the daily studies of the office, during the year ending June 30, 1879, has been eight thousand seven hundred and sixty. The charts prepared for the issues of the Monthly Review, and exhibiting each the data received for the month and discussed for the month, have varied from three to seven in number for each month, a total of fifty-four for the year. The increase in number has been due to the addition of International charts.

The data thus accumulating on the files of this office have afforded scope for generalization differing from and perhaps more extensive in number than any before had by any one nation.

The number of reports received daily and unceasingly have necessitated a constant labor to keep up, in the discussion of them, and in the record of the results of that discussion, to the dates at which the reports are recorded, in order to prevent an accumulation which, by its mass, might lessen their usefulness. The published daily study-charts of the office and the Monthly Review, with its charts of generalizations are examples of this work—the study-charts exhibiting a study of the data telegraphically received on each day; the charts of the Monthly Review combining the results had from these data and those received from other sources for each month during the year. It has been thus

in the power of the office to lay before scientists and the public, at the close of each day, if necessary, and at the close of each month and each year, a summary for the periods then terminating. The labor of referring to the individual records in figures, which, after a time, becomes almost impracticable, is thus rendered unnecessary on the part of those who receive these papers. The charts of the average direction and velocity of movement of areas of low barometer, charts of the average barometric pressures at the hours of tri-daily report, charts of wind direction found most frequent at the different stations before rain-fall, charts of rain-frequencies for the different months, are examples of other studies of generalization. Studies of this character, and incidental to those which have in view the pre-announcement of storms or other meteoric changes, furnish results valuable for practical uses.

Information of this character has been so freely and so widely furnished that it is not always considered that by no other nation is information of a similar character furnished to nearly a similar extent, and that nine years ago it had not been contemplated in the United States as possible to furnish it to all.

It is by studies of this kind, and in this great field of research, that the hoped-for rules, each of which is to add its aid in the effort to attain precision of forecast and foreknowledge of climatology for the United States, are to be elaborated. It is by such rules and such knowledge, slowly but each year improving, the widest benefits of the service are to be sought. These will follow the practical use, by the people themselves, of the information gained through the work of the service, either in their attempts to have foreknowledge of coming changes from the study of their own instruments, or by supplementing that study by reference to the daily-published bulletins and reports of this office. There is hardly a class of the people, or an industry they practice, but to which good may, in this way, and from such studies, result. Enough has already been done to prove that it is possible.

The policy pursued by the office of diffusing as widely as possible, and in condensed form, the information in its possession, and that of extending the scope of its observations, enables it to benefit, in studies like these, by the labors of students everywhere. The results returned to the office, in the able suggestions made by distinguished scholars who have received its publications, and based upon deductions had from the charts and data so furnished, aid in forming the rules on which its duties rest. The list of correspondents to whom the publications of the office are furnished contains the names of many of the leading scholars and scientific men in different parts of the world. The instances are not infrequent in which the most interesting papers upon the subject of meteorology, read before the most distinguished and learned societies in the United States, have rested for their value almost wholly upon the studies of the data of observations and the charts prepared at and furnished from this office.

The search for generalizations or the support of theories becomes comparatively easy when the material is furnished in elaborate form, requiring little more than collation for either.

The Synopses and Indications have been furnished for the press at the regular hours, 1 o'clock a. m., 10.30 a. m., and 7.30 p. m., daily, and under the same rules as in preceding years. There has been no failure in the delivery of any report during the year. The total number of statements thus issued for publication has been one thousand and ninety-five. These have been telegraphed at the moment of their issue to the principal cities, and have appeared in some form in almost every journal in the United States. A careful analysis of these statements of the office,

the year terminating June 30, 1879, and a comparison with the conditions afterwards occurring within the twenty-four hours ending, and within the district to which each forecast has had as given a percentage of verifications as follows:

is had to the district map:

Percentage of verification for each month of the year ending June 30, 1879.

	1878.						1879.					
	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April.	May.	June.
.....	80.6	84.4	83.5	87.6	89.1	88.6	85.5	93.8	89.3	81.8	84.3	84.9
States.....	77.8	87.6	85.9	88.4	90.8	87.0	86.0	94.1	90.5	87.2	85.6	86.0
States.....	82.5	88.5	89.2	87.3	91.2	85.5	88.6	92.3	91.6	82.0	80.4	79.8
States.....	89.8	91.9	82.4	87.2	88.2	90.1	87.0	92.7	90.7	83.5	76.6	80.4
States.....	88.7	91.2	89.5	89.1	90.4	88.6	83.5	90.9	87.8	81.9	76.7	81.4
States.....	84.9	86.7	81.9	85.3	91.0	87.1	87.0	94.1	91.2	83.2	84.7	88.6
States.....	83.1	87.6	83.3	87.4	89.7	89.4	88.1	92.5	89.6	81.8	87.1	80.8
Ohio Valley.....	81.6	82.3	85.8	86.8	92.4	85.5	86.3	95.8	89.4	84.4	84.2	84.9
Pacific Valley.....	84.3	88.8	84.2	89.4	92.4	85.2	85.6	92.1	88.1	81.5	84.1	83.3
Valley.....	82.9	82.8	82.8	86.8	91.5	84.6	84.6	91.4	89.1	80.1	84.0	81.2
Percentage of verifications.....	83.7	87.1	85.0	87.5	90.7	87.1	86.2	93.0	89.7	82.9	82.8	83.7
Verifications for the year (changes of barometric pressures, temperatures, wind-direction, and character of weather expected comprised).....	86.6											
Verifications for the year (forecasts of the character of the weather only).....	90.7											

Percentages of accuracy first above given are for statements comprising predictions of the changes of barometric pressures, temperatures, wind-directions, as well as the character of weather to be expected in the districts to which they have reference. Such predictions are more difficult to make correctly than those relating to the future conditions of the weather alone, for in such forecasts it must be pre-announced twenty-four hours for each district outlined upon the map, whether in that particular district the barometric pressures will increase or decrease; whether the temperatures will rise or fall; what in each district will be the wind-directions, and other statements far more difficult to make accurately than the general forecasts that the skies will be cloudy, and with and without rain. The percentage of accuracy of forecasts limited to the pre-announcement of the character of weather to be expected in the districts, exclusive of the other conditions referred to, has been 90.7.

It has been possible to exhibit in this report, for the first time, the results of accuracy of verifications of indications announced for the coasts of the United States, as follows:

Percentage of verifications for the Pacific coast region for the months given.

	1879.				
	Feb.	March.	April.	May.	June.
Pacific coast region.....	91.1	91.1	78.4	93.1	88.3
Central coast region.....	96.4	83.7	83.6	85.4	93.3
Atlantic coast region.....	83.9	87.5	90.5	93.1	95.0
Percentage of verifications.....	90.5	89.1	84.2	90.5	92.2

Indications are for the "weather" only, and, for the period made, the percentage is 89.3.

There was need of much deliberation and practice before it was deemed wise to attempt the work of forecasts for the great extent of coasts bordering upon the Pacific Ocean. Tradition had held it to be impossible to accurately announce approaching changes for any coast fronting westward with sea-surfaces only beyond it. The stations upon the coast under consideration are yet few, the telegraphic communication difficult, the contours of the earth's surface broken by abrupt and great changes of elevation—the stations lying back from the coasts so difficult to reach as to be almost useless. It has been found, however, that the facilities for study now provided in the study-room of the office enable changes approaching from the seaward to be considered by their effects on land, and studies to be made as to what sequences at sea and upon the coast must follow conditions exhibited upon the charts as existing in the interior. The results of such studies are exhibited by the statement of verifications submitted above. This work is not without its reference to future work upon the oceans. Map 9 exhibits the districts into which this region has been divided for purposes of this study.

The attempt has been continued to utilize the statements of indications issued in bulletin form by adding, when possible, precise information as to the location of areas of disturbance or storm-centers, their expected direction of movement, and such other facts as might be stated fully on the bulletins to be displayed at board-of-trade rooms and other prominent points in cities, and be of utility both as amplifying the reports of indications furnished for the press, and also as capable of being issued from the central office at any hour it might be considered necessary so to issue them. The press reports are habitually furnished at fixed hours only. At these hours important and sometimes great atmospheric changes may seem to be only slightly indicated, when such changes afterward develop rapidly. It is sometimes not possible to pre-announce them in any other than the bulletin form. The popular faith in the announcements of the office, now in the ninth year of their issue, has not diminished. So far as can be judged from reports, notably more attention has been paid to the announcements among the farming population. There seems each year more confidence and a greater willingness to be guided by the statements of forecasts in the conduct of agricultural operations. The increase in the proportional amount of the wheat product this year has been commented upon by the local press, in some portions of the country, as to some extent due to the accuracy of the weather reports furnished the farmers daily.

This confidence of the people as a whole has not been sensibly lessened at any time by the errors and omissions which sometimes direct attention to the fact that in the present condition of science, and with a system of observation still too limited, premonitions having for their scope a territory so great as that of the whole United States, and embracing the coasts of two oceans, cannot always be correct for every part of a district.

The reports of forecasts are necessarily limited also to a certain number and few telegraphic words, the report for a district comprising several States being condensed into four or five lines, every word of which must be paid for.

It is not possible always to describe within this limit of description weather changes clearly indicated as to occur, but notice of which must be omitted for want of space. It would not be difficult to write for each State, and with benefit to the readers, a synopsis with the forecasts stated in numbers of words equal to the whole number now allowed for those relating to all the States of the Union.

The Indications are not always correctly understood by those who read them; the error of mistaking the announcement made for one district, as set forth on the District Map, as applying to a district differently located is frequent. Every effort is made to render the division of the country into districts for purposes of description properly understood.

The popular knowledge of the duties of the office, and its reasonable success in discharging them, is in no way better evidenced than by the criticisms to which it is subjected if errors occur in the work. It is not many years since the work itself was, at home and abroad, deemed impracticable. In more recent criticisms the work has been commented upon adversely and severely, because even occasional errors happen. It has seemed to be considered that it ought never to fail. There has been no work other than that of this office to cause such success to be popularly expected. Criticisms of this kind are, by the general accuracy they imply, a source of satisfaction.

The instruction of officers of the Signal Service to fit them for the various duties of the office has been continued. The especial duties in which the officers on duty are severally engaged, each in his sphere, and each of which duties contributes its share to the success of the whole, are such as necessarily prepare them for the course of especial study and practice, and fit them to take charge, in turn, of the separate divisions and sections into which the office-work is divided. A roster for duty becomes in this way possible, and provides at once for the permanent continuance of a work to be prosecuted both by day and at night, by providing for the relief of men wearied in the discharge of such parts of the duty as impose severe physical as well as mental strain by others fresh from duties less burdensome. It insures also the instant filling of vacancies in the cases of sickness or absence of any officer.

The studies to which reference has been hitherto made and the data condensed for generalization improve each year the material had in the office for study.

In the incessant work of the map-room, and in making the computations constantly called for in the course of office duty, important assistance is rendered by the competent and well-taught non-commissioned officers and soldiers on duty in the several divisions. In the matter of arriving at generalizations, it would be impossible often to handle the masses of data which must be considered without the faithful service of these men. While absolute accuracy cannot be expected in work so extensive as that required from this office, and the results of which are demanded for instant publication, there is attained an accuracy sufficient for every practical purpose, and one which each year increases in rigor.

The data which appear in the publications of this office are checked figure by figure five times before the printing. These are, whenever it is practicable, accompanied by a chart, useful in itself, and by the charting the best check upon all the data which have served as its bases. Additional checks are adopted whenever experience has demonstrated a closer accuracy can be had.

The display of cautionary day and night signals, by flags by day and lights by night, has been made systematically, on occasions of supposed especial danger, at the following points, ports, and harbors located upon the lakes, the Atlantic, and the Gulf coasts:

Alpena, Mich.; Atlantic City, N. J.; Ashtabula, Ohio; Baltimore, Md.; Barnegat, N. J.; Bay City, Mich.; Booth Bay, Me.; Boston, Mass.; Buffalo, N. Y.; Cape Hatteras, N. C.; Cape Henry, Va.; Cape Lookout, N. C.; Cape May, N. J.; Cape Vincent, N. Y.; Charleston, S. C.; Charlotte, N. Y.; Chatham, Mass.; Chicago, Ill.; City Island, N. Y.; Cleveland,



Ohio; Deer Island, Me.; Detroit, Mich.; Duluth, Minn.; Dunkirk, N. Y.; Eastport, Me.; East Tawas, Mich.; Erie, Pa.; Escanaba, Mich.; Fairport, Ohio; Fall River, Mass.; Forester, Mich.; Fort Macon, N. C.; Frankfort, Mich.; Galveston, Tex.; Gloucester, Mass.; Grand Haven, Mich.; Green Bay, Wis.; Highland Light, Mass.; Horn's Pier, Wis.; Hyannis, Mass.; Indianola, Tex.; Jacksonville, Fla.; Kenosha, Wis.; Kewaunee, Wis.; Key West, Fla.; Kittyhawk, N. C.; Lewes, Del.; Ludington, Mich.; Mackinac City, Mich.; Manitowoc, Wis.; Marblehead, Mass.; Marquette, Mich.; Menominee, Mich.; Milwaukee, Wis.; Mobile, Ala.; Monroe, Mich.; Muskegon, Mich.; New Bedford, Mass.; Newburyport, Mass.; New Haven, Conn.; New London, Conn.; New Orleans, La.; Newport, R. I.; New York City; Norfolk, Va.; Northport, Mich.; Oswego, N. Y.; Pensacola, Fla.; Pentwater, Mich.; Port Austin, Mich.; Port Eads, La.; Port Huron, Mich.; Portland, Me.; Portsmouth, N. H.; Racine, Wis.; Rochester, N. Y.; Rockland, Me.; Rogers' City, Mich.; Saint Joseph, Mich.; St. Mark's, Fla.; Sandusky, Ohio; Sandy Hook, N. J.; Savannah, Ga.; Sheboygan, Wis.; Smithville, N. C.; South Haven, Mich.; Stonington, Conn.; Sturgeon Bay, Wis.; Thatcher's Island, Mass.; Toledo, Ohio; Traverse City, Mich.; Tybee Island, Ga.; Wilmington, N. C.; and Wood's Holl, Mass.

During the year ending June 30, 1879, two thousand five hundred and seventy-three signals have been ordered, counting each separate display at each port as a separate signal, in anticipation of ninety-six dangerous storms.

Of the number of cautionary signals displayed, seventy-nine and eight-tenths per cent. have been afterwards reported as justified by the occurrence of winds, &c.

Of the number of off-shore signals displayed, ninety-three and nine-tenths per cent. have been afterward reported as justified.

The following table exhibits the number of signals (cautionary and off-shore) ordered during each month, and the percentage of verifications for each month; also the total number of signals ordered during the year, with the total number verified and annual percentage of verifications:

Month and year.	Cautionary signals.			Cautionary off-shore signals.			Total number of signals.		
	Ordered.	Verified.	Per cent.	Ordered.	Verified as to velocity.	Per cent.	Ordered.	Total number verified.	Per cent.
1878.									
July .....	78	62	79.5	11	0	0.0	11	89	69.7
August .....	39	30	77.0	6	4	66.7	6	45	75.6
September .....	158	130	82.3	17	14	82.4	15	144	82.3
October .....	234	207	88.3	93	73	78.5	80	337	85.6
November .....	260	202	77.7	111	83	74.8	111	371	78.8
December .....	187	153	82.9	136	113	83.1	133	323	83.0
1879.									
January .....	167	140	83.8	132	118	89.4	127	290	86.3
February .....	143	135	94.4	110	98	89.1	169	253	92.1
March .....	199	157	78.9	81	72	88.9	69	280	81.8
April .....	192	128	66.7	96	80	83.3	92	288	72.2
May .....	178	110	61.8	42	17	40.5	30	120	57.7
June .....	117	103	88.0	15	9	60.0	15	132	84.8
Totals .....	1,952	1,560	79.87	850	681	80.1	798	2,802	79.94



Of the total number of cautionary and off-shore signals thus displayed, seventy-nine and nine-tenths per cent. have been afterward reported as justified by the occurrence of winds held to warrant them at the points where the signals were displayed, or within the radius of one hundred miles distant of these points, as set forth in the rules of the office. In the cases reported as failures of justification following the display, the winds did not attain, at the port or within the described radius, a violence held to justify the warning. The signal ordered by this office is always cautionary in its character, not announcing that a storm will come, but that the indications are sufficiently threatening to call for caution, both as to going to sea and for preparation for rough weather if vessels are about to sail.

It is one of the most difficult tasks which fall to the office to determine in advance over what ports to be selected, to the exclusion of others, an advancing storm-area will pass, and in such a manner as to be accompanied at these ports with a given wind-velocity. The direction of movement of storm-areas changes sometimes unexpectedly, and ports are then threatened at which, while the signal may be exhibited, it cannot be shown far enough in advance to avoid the coming danger. Within the same area the winds differ in force at different points. They differ also with different contours of the earth's surface. There is the danger that warnings unnecessarily given may delay the movements of shipping. A heavy responsibility is incurred if the warnings are not given when they ought to be. Time, increasing experience, and increasing facilities will insure improvement.

The storm of a storm-area with wind registering a wind-velocity of twenty-five miles per hour on land, indicating, as it frequently does, a wind-velocity of forty-five or fifty miles at a distance of ten or twenty miles from the land, is regarded as the lowest velocity justifying a signal.

There is no work of the office in which it has been felt necessary to progress with more caution than in that relating to the display of cautionary signals. None had ever been shown in the United States when the duty of making such displays devolved upon this office, and it was in debate whether any had ever been shown with practical success elsewhere.

Two classes of signals, the cautionary signals and the cautionary off-shore signal, are in use on the coasts of the United States. The "cautionary signal," *i. e.*, a red flag with black square in the center, by day, or a red light by night, calls for caution in view of an approaching storm, and is so "cautionary" with reference to winds blowing from any direction. The cautionary off-shore signal, *i. e.*, a white flag with black square in the center, shown above a red flag with black square in the center, by day, or a white light shown above a red light by night, is "cautionary," with reference to winds expected to blow from a northern or western direction, or off-shore, at or near the place at which it may be displayed. This latter signal is displayed at and on the regular place and staff, and consists of a *white flag with a square black center* shown above a *red flag with a square black center* by day, or a *white light* shown above a *red light* by night. This signal is known as the "cautionary off-shore signal," and indicates, when shown, that while the storm disturbance is considered at the office of the Chief Signal Officer as not yet passed for the port or place at which the signal is displayed, and the winds may yet be high, and three may be danger, the winds are expected to blow from a northern or western direction or "off-shore," at or near the port or place where the signal may be.

The display of this signal will often follow and must be distinguished from the display of the usual "cautionary signal," *i. e.*, a square red flag with a square black center by day or a red light shown at night—which retains, when shown alone, its usual meaning. The display of either is always cautionary.

It is of important utility in the management of vessels and for the safety of them to be thus preadvised as to the direction in which coming winds will blow.

The plan for subordinate stations at which cautionary signals might be displayed (systems of these stations being managed as subordinate to and in connection with the signal-stations of the first class, established at the principal cities and ports of the United States, and immediately controlled from this office) has been continued in operation since the date of the last annual report. As described in that report, these subordinate stations are known as "display-stations." They are located at the smaller lake or sea ports, and are classed several together in sections. Each section is numbered as "Section one," "Section two," &c., and is under the immediate supervision of a sergeant of the Signal Corps, located at a named station at some neighboring principal port. The duties at display-stations are limited to the display, upon the receipt of the telegraphic order by day or at night, of the cautionary signals or cautionary off-shore signals.

Display-stations have been established on Lakes Erie, Ontario, Huron, and as follows: *Section three*, established July 20, controlled from Detroit, Mich., consists of stations at Ludington, Pentwater, Traverse City, Frankfort, Northport, Saint Joseph, South Haven and Muskegon, Mich. *Section four*, established August 1, controlled from Detroit, Mich., consists of Bay City, East Tawas, Forester, Port Austin, Roger's City, and Monroe, Mich. *Section five*, established August 1, controlled from Cleveland, Ohio, consists of Dunkirk, N. Y., Fairport and Ashtabula, Ohio. *Section six*, established August 1, controlled from Oswego, N. Y., consists of Cape Vincent, N. Y. Signals ordered for Chicago, Ill., were repeated at New Buffalo, Mich., until February 15, when it was discontinued as a display-station. Signals ordered for Rochester, N. Y., are repeated at Charlotte. Cautionary signals are displayed at Mackinac City, Mich., when ordered direct from this office. On the sea-coast as follows: *Section seven*, established August 20, controlled from Portland, Me., consists of Millbridge, Deer Island, Rockland, and Booth's Bay, Me., and Portsmouth, N. H. The display of signals at Millbridge and Deer Island, Me., was discontinued August 19, but resumed at Deer Island, April 1. Belfast, Me., was originally in this section, but was discontinued June 1. *Section eight*, established August 15, controlled from Boston, Mass., consists of Chatham, Newburyport, New Bedford, Marblehead, Hyannis, Thatcher's Island, Gloucester, Highland Light and Fall River, Mass. The display of signals was suspended at Fall River, Mass., May 12. Signals ordered for New London, Conn., have been repeated at Stonington, Conn., since October 10, and were repeated at Watch Hill, R. I., from October 15, until September 15, when the telegraph office at that place was closed for the season. Signals ordered for New York City have been repeated at City Island, New York Harbor, since February 11. Signals are ordered for Lewes, Del., direct from this office, and for Port Eads, La., through the sergeant at New Orleans, La. Signals ordered for Mobile, Ala., have been repeated at Pensacola, Fla., since November 10. Tybee Island, originally a station of the first class, was discontinued as such and designated a display-station, February 15; since that time signals ordered at Savannah, Ga., have been repeated at



that point. Of signals displayed at display-stations, the records show seventy per cent. considered verified at the stations themselves.

Before the organization of the display system signals were displayed at *forty-six* ports only; they are now displayed, when need be, at *one hundred and eleven* ports.

The warnings of the service have been doubled in utility by the adoption of the off-shore signal and the organization of the system of display-stations.

An additional safeguard is offered on the Lake coasts, where either full signal stations or display-stations exist, by the fact that whenever it is found necessary to display a warning signal of any character upon any station on those coasts, notice and warning of the fact is announced by telegraph at every other station along the lakes.

There are no other coasts so fully guarded by the display of storm-signals as are now those of the United States.

A completeness of work, which a few years ago seemed not to be attainable on the part of the office for many years, is, by the experience gained in those duties within the few years past, already accomplished.

If the duties of this office are done and its warnings exhibited at its warning stations as they ought to be, the record of disasters cannot fail to show, by the lessened number of them, the good effects of this watchful care. It is a pleasant thought that the protecting vigilance of the United States is offered in this regard and in all matters pertaining to this duty, equally to the shipping of every foreign people with the shipping of its own.

Compilations of statistics have been made to determine definitely and to the satisfaction of the office, what certain benefits to shipping have followed the displays of cautionary signals. A series of tables of disasters to shipping, compiled for a number of years, have seemed to show that the annual average of disasters occurring at or near points at which cautionary signals have been displayed has been lessened by a considerable percentage for the years during which the displays have been had. The discrimination made by insurance companies against insurance risks, taken for the sea and lake ports and places which have no signal station exhibits, by the increased pecuniary consideration demanded for such risks, amounting in the aggregate to a very considerable sum, an evidence of appreciation of the value of them. The reports of the observers at stations give instances in which numerous vessels have remained in different ports in recognition of the warnings given. In these cases danger has been avoided. In other cases the displays of signals on dangerous coasts have been followed by the making to sea for an offing of all of the vessels in sight of the display. In other instances reported, vessels going to sea in disregard to the warnings have been driven back, have suffered injury, or have been lost. So far as can be judged at this office, a proper attention is paid to its warnings, particularly on the part of the coasting or smaller classes of vessels on the sea-coast, and by shipping generally on the lakes. Especially does this happen at those times of the year recognized by seamen as the stormy seasons. A series of statistics, collected for five years past, give the following results:

During the year ending June 30, 1879, six hundred and seven storm warnings for Canadian stations were telegraphed from this office to Prof. G. T. Kingston, at Toronto, Canada. The uses made of these warnings, or their results when displayed, have not been communicated to this office.

The plan of exhibiting as widely as possible in the agricultural districts throughout the United States the results of the daily office studies

in the form of printed forecasts for the benefit of the agricultural populations, frequently described in former reports, has been continued in operation. The effort to cover so wide an extent of territory has made the labor great. The continuance of the work has seemed to be warranted by the favor with which it has been received. It has been considered due to the farming populations that they should have an opportunity to profit by whatever information could be given them. With the active co-operation of the Post-Office Department, with which there is an arrangement for this purpose, six thousand and forty-two printed Farmers' Bulletins, on which have appeared daily the reports of this office, have been distributed and displayed in frames daily at as many different cities, villages, and hamlets in different States. There are numerous and especial requests to increase this number. At 1 o'clock a. m. of each day, except Sunday, the midnight report of the office for the ensuing day has been telegraphed during the year ending June 30, 1879, to seventeen centers of distribution, located in the following-named cities: Albany, N. Y., 267; Bangor, Me., 166; Boston, Mass., 659; Buffalo, N. Y., 282; Burlington, Iowa, 187; Chicago, Ill., 613; Cincinnati, Ohio, 546; Des Moines, Iowa, 66; Detroit, Mich., 334; Leavenworth, Kans., 33; Logansport, Ind., 184; Memphis, Tenn., 20; Nashville, Tenn., 97; New York, N. Y., 712; Pittsburgh, Pa., 314; Philadelphia, Pa., 822; Saint Louis, Mo., 368; Washington, D. C., 472. In addition thereto, a miscellaneous issue of five hundred copies is made at the several printing stations above mentioned. At nine of these stations the bulletins are printed by civilian employes upon the office presses, and under the immediate supervision of the sergeants in charge. At the other eight stations the work is wholly done by enlisted men of the Signal Service.

The numbers placed after the names of the cities denote the number of hamlets, post-offices, or railway stations supplied from each city as a center.

These centers have been carefully chosen as in the midst of the denser agricultural populations of the United States, and at points whence the facilities of communication would enable the surrounding districts to be most rapidly supplied.

During the past year a station of distribution has been established at San Francisco, Cal., for the farmers of the vicinity and of the farmers of the Sacramento and San Joaquin Valleys, and one also at Des Moines, Iowa.

The telegraphic report of forecast telegraphed from the central office at 1 a. m. of each day, and received at a center of distribution, is at once there printed on bulletin forms provided for that purpose. These are enveloped as rapidly as printed, addressed to each designated post-office within the district to be supplied, and which can be reached by the swiftest conveyance by the hour of 2 p. m. of the date, and are then placed in charge of the Post-Office Department under an arrangement by which each postmaster receiving a bulletin has the order of the Postmaster-General to display it instantly in a frame furnished by this office for that purpose, and to report, in writing, the fact and time of its receipt and its display, to the Chief Signal-Officer.

The bulletins have reached the different offices and have been displayed in each of the frames at the average hour of 11 a. m., averaging thus ten hours from the time the report has left the office of the Chief Signal-Officer until it has appeared bulletined in the midst of the farming populations, and accessible to them in the distant parts of the country.

The information given on these bulletins has a value in addition to the forecasts. Facts relating to the climatology of the different sections

are condensed into brief notes, which are published with the telegraphed reports. For instance, each bulletin announces for the geographical district in which it is displayed, and in addition to the forecast for the day, what winds in each month have been found most likely and what least likely to be followed by rain at the stations within each district. The simple foot-note has its effect in increasing the gains and reducing the losses of harvesting. (Paper —.) These bulletins will improve for the uses for which they are intended as the experience of the office permits the information they exhibit to be supplemented with further data and other rules. With each year the popular knowledge of the uses of the bulletin and some increased interest in and study of meteorology render the farming communities better able to judge of its correctness and to benefit by its contents. It is contemplated, as the work of the office progresses, to add to the bulletin such brief instructions as may be developed in regard to its uses in connection with such local instruments as may be had for local use. Reference has been made in preceding reports to the economy of this work. Careful estimates have shown that if the total cost for each bulletin station at which the bulletin is displayed at each different post-office, hamlet, village, or city were computed to be twenty-seven cents per day, the sum so resulting would meet all the expenses caused by the Signal Service. A little saving of any one crop of grain to any interest made on any one day in the vicinity of each station, supposing nothing to be saved on any other day of the year at or near that station, would more than counterbalance the expenditure.

This distribution of the instruments known as the Weather Case, or Farmers' Weather Indicator, has been continued. Brief rules for use accompany each instrument. (Paper 28.) This instrument will supplement with local signs and with the local indications of the several instruments; it combines in simple form the general indications given in the bulletin reports. It will, it is hoped, enable agriculturists and others to determine for themselves in advance something as to the character of the coming weather from local indications alone, when added means of information cannot be reached or may fail.

Whenever appropriations at the control of the office shall make it possible to publish, to accompany the Farmers' Bulletin, or in the columns of newspaper journals, graphic weather charts, simply drawn and so explained as to be comprehended as to their meaning by persons of ordinary education without special study, the use, it is to be hoped, of instruments of this character will be found very available. The use of the Weather Case alone at isolated places, where other reports or information other than that had from the readings and the use of the instrument itself cannot be had, will, with little practice, fill a want long felt among the agricultural populations, and often afford to them valuable results. It cannot fail to turn thought and study in a useful direction.

It is in contemplation, when the amounts of the appropriations for the service and its strength permits, to place such instruments, should experience warrant, both at the farmers' post-offices now reached by the Farmers' Bulletin and at others not reached by either the bulletin, the daily press, or the telegraph, for the uses of the farming population.

Since the date of the last annual report, a greater and more satisfactory extension of the plans by which the information carried on the files of the office is disseminated among the people of the United States generally, has become possible. A railway bulletin service established on the lines of railway which cover the country so closely with their network, has been set on foot in co-operation with this office. By an ar-



rangement made between the different railway companies and the War Department, the companies receive at the time of the midnight report, and by telegraph, a copy of the office report then made. This is the most important report of the day, the report exhibiting the Synopses and Indications, which appear so generally published in the columns of the newspaper journals. The report received by the railway companies is at once distributed, under the direct supervision of the superintendents of the companies and of the railway telegraphs, to designated railway stations along the several railway lines. Thirty-six railway companies, with a total of one thousand two hundred and twelve railway stations, are now co-operating in this service. The report received at a railway station is, by standing order of the railway officers, immediately there bulletined by the railway agents on forms provided by this office, and check reports are made by the agents to this office, in order that the attention of the superintendents may be called to any delay or error in the work. This work is yet in its infancy, but promises to be of great utility. It is capable of indefinite extension, and will exhibit the forecasts of this office daily, in a few hours after their issue, to the traveling public and the vast numbers of farmers and others resident in the great extent of country through which the railway lines pass, and who could not be otherwise reached.

The railway companies rendering this service to the United States, without charge, are not rendering a gratuitous service. A benefit is returned to them in the full knowledge given the managers of the railway lines of the weather conditions prevailing upon them. A further benefit comes to the companies that they render everywhere to the masses of the people, in the midst of which the lines pass, a daily service recognized with gratitude. The companies which have entered into this co-operation with the service are as follows:

Chicago and Northwestern Railroad, Albert Keep, president, W. H. Stennett, superintendent, Chicago, Ill., 79 stations; Kansas City, Fort Scott and Gulf Railroad, H. H. Hunnewell, president, H. C. Sprague, superintendent telegraph, Kansas City, Mo., 20 stations; Atchison and Nebraska Railroad, N. Thayer, president, W. H. Forman, superintendent telegraph, Atchison, Kans., 18 stations; Atchison, Topeka and Santa Fé Railroad, 32 stations; Atchison, Topeka and Santa Fé Railroad (Kansas City branch), 5 stations; Atchison, Topeka and Santa Fé Railroad (Pleasant Hill branch), 3 stations; Atchison, Topeka and Santa Fé Railroad (Wichita branch), 1 station; Atchison, Topeka and Santa Fé Railroad (Trinidad branch), Thomas Nickerson, president, and George B. Lake, division superintendent, Topeka, Kans., 2 stations; Saint Louis, Iron Mountain and Southern Railroad, Thomas Allen, president, and A. W. Soper, general superintendent, Saint Louis, Mo., 16 stations; Saint Louis and Southeastern Railroad, J. H. Wilson, president, and O. M. Shepard, assistant general superintendent, Evansville, Ind., 23 stations; Pittsburgh, Cincinnati and Saint Louis Railroad, Thomas A. Scott, president, and O. H. Booth, superintendent, Mansfield, Ohio, 35 stations; Kansas City and Council Bluffs Railroad, N. Thayer, president, and J. McCouniff, superintendent telegraph, Saint Joseph, Mo., 11 stations; Baltimore and Ohio Railroad (trans-Ohio division), John W. Garrett, president, and C. H. Hudson, superintendent, Chicago, Ill., 19 stations; Kansas City, Lawrence and Southern Railroad (late Leavenworth, Lawrence and Galveston Railroad), H. H. Hunnewell, president, and H. C. Sprague, superintendent telegraph, Kansas City, Mo., 19 stations.

This office furnishes the blank bulletins (Paper 29), the frames for



displaying them, and the necessary forms, envelopes, and stamps for making regular reports of the receipt and display of the bulletins.

The river reports, giving the average depth of water in the different great rivers of the interior, and notices of the dangerous rises for the benefit of the river commerce and the populations in the river valleys, have been regularly made, telegraphed, bulletined in frames, and also published by the press at the different river ports and cities. River stations have been opened, during the year, on the principal California rivers.

The manner in which these reports are prepared and used, and the mode by which a "danger line," with water below which there is considered to be no danger, while every rise above it is dangerous, have been sufficiently explained in preceding annual reports.

The uses of the information published in reference to this danger line had in connection with the daily reports of this office have, on the occurrence of river floods, enabled those interested to judge of the probable limits of the rises of the water to be expected at the different places on the river-banks, and of the dangers to be anticipated. This knowledge has made possible many and necessary precautions for safety.

The data had at this office from stations making river reports permit a foreknowledge of changes likely to happen, and make it possible to give useful warnings of coming floods, ice floods, or of sudden and great rises of the river water-levels. The daily reports are useful also at times of low water, the information they then give permitting river shipping to be moved with intelligent foreknowledge of the probable depths of water to be found in the river channels at different points upon the river's course. These reports are especially useful to those for whom they are intended, as having an official character.

In instances which have attracted the attention of this office, the notices of the probable heights floods anticipated or then passing would attain, have been followed by preparations made to guard the levees against danger. A brief examination of the charts of changes of the river levels accompanying this and preceding reports, shows that the river rises to occur at the different localities can be judged of frequently as to the time at which they will occur, and their extent, by the conditions existing at points sometimes far distant. Accumulating data render studies of this kind valuable. In connection with these studies the examination of the daily weather-charts, showing places at which precipitation has occurred or is likely to occur, and the amount of such precipitation, had with the study of the charts of the river basins, which enable it to be determined what rivers will be affected by precipitation, are found to be of value in furnishing correct prognostications. This subject has been referred to in preceding reports.

The Chief Signal-Officer has before expressed the opinion that with proper study of the river floods, and with stations properly placed, reporting at times of especial danger, it can be made almost impossible for a flood to follow a river course without notice given in advance of its coming at the localities threatened. Daily bulletins of river reports have been regularly displayed during the year at the following-named stations: Augusta, Ga.; Cairo, Ill.; Chattanooga, Tenn. (from January 8, 1879); Cincinnati, Ohio; Davenport, Iowa; Dubuque, Iowa; Keokuk, Iowa; La Crosse, Wis.; Leavenworth, Kans.; Louisville, Ky.; Memphis, Tenn.; Morgantown, W. Va.; Nashville, Tenn.; New Orleans, La.; Omaha, Nebr.; Pittsburgh, Pa.; Portland, Oreg. (from March 17, 1879); Red Bluff, Cal. (from December 15, 1878, to March 15, 1879); Shreveport,

La.; Saint Louis, Mo.; Saint Paul, Minn.; Umatilla, Oreg.; Vicksburgh, Miss., and Yankton, Dak.

Systematic reports of river observations, carefully made and closely studied, are had daily by telegraph and weekly by mail, on established forms, from the stations above named. Reports of similar observations, made daily, are also had from special river stations, named in the record of stations. The observers are, in fact, a river guard. For the months in which floods more frequently happen, and at any time in any case of special danger, the reports are telegraphed. For those months of the year in which danger is not anticipated from floods, these reports are forwarded by mail.

Charts of the changes in the principal western rivers for the year ending June 30, 1879, and upon which stations reporting to this office have been established, are given in charts 10 to 21.

It will be noted that by the study of such charts, continued from year to year, those seasons in which floods are more likely to occur on any water-course can be predetermined, and it can be ascertained what amounts of precipitation, occurring in the different river-basins, and under what circumstances, will be followed by floods, and, approximately, what will be the extent of floods shown in this way to be anticipated. Whenever the facilities of the Signal Service are so far extended as to permit systematic observations to be had of any river-course and telegraphic warnings to be given in instances of danger, the serious loss of property or life caused by floods can be, and with comparative little expense, guarded against on any river throughout the United States. The occasions occur on the separate streams at long intervals only. The levee systems of the Mississippi and other great rivers can be in no way better guarded themselves, and made in their turn safeguards to the immense agricultural interests they are intended to protect, than by systems of river reports, which will warn of danger in time, and summon, if need be, the strength of the State to watch and strengthen these State constructions.

The system of river reports is now extended to the rivers of California and Oregon, as well as to the principal rivers east of the Rocky Mountains.

The daily reports of the surface and bottom water-temperatures at designated points upon the lakes and seacoasts have been continued throughout the year as in preceding years. These reports are furnished at the request of Prof. Spencer F. Baird, United States Commissioner of Fish and Fisheries, the object had in view being to determine the proper waters in which to place the different varieties of food-fishes. It is necessary for this purpose to ascertain the extremes and means for the year of the water temperatures in the different localities. This series of reports has now continued for six years. Statistics of this kind—the depth of the water in the different streams being, as it is, daily noted—form the basis of a systematic study of pisciculture, in which are considered, by students attached to the commission, both the amount of the water supplies in different channels or basins at the different seasons of the year, and the temperatures to be expected in each. There is no more ready way for furnishing cheap food for the people than by the culture of food-fishes, and every facility for the work within the control of this office is gladly furnished to this end. It is quite possible that the great fisheries on or near the Atlantic coasts, or on the fishing banks, could be materially aided by the pre-announcement of the barometric or other atmospheric changes approaching, were the office informed of the precise nature of the reports to be desired. It is antici-



pated that under the laws providing for the seacoast service of the Signal Service, it will, in the near future, be possible to furnish officially series of reports suitable for this purpose from observations taken at points on and near the coast at stations contemplated in existing laws.

The series of reports, being the announcement from day to day of such approaching changes of temperature as would be likely to cause the closing of canals by freezing, or, as in other cases, would open them, were continued during the days of closing canal navigation of the fall and winter of the past year. This series of reports has now been continued for seven years. The commerce moving upon the canals of the United States, as the closing of the canals draws near, is sometimes of greater value than at any other portion of the season. These water-routes are then thronged with hundreds of laden barges, each of which must move with reference to the danger of the closing of the routes by freezing. The market rates at the great cities are influenced by the probabilities that the merchandise or grain thus afloat will reach or fail to reach the points for which it is intended. These reports are received with satisfaction by the canal companies, and by the commercial associations of cities. They constitute, for the months of November, December, and January, one of the regular issues of the office.

The exhibition of symbol maps, on which the meteoric conditions are shown by symbols, changing for each report, at the rooms of boards of trade, chambers of commerce, and of commercial associations in the principal cities, and at places of public resort, for the benefit of shipping and other interests; the display of bulletins, the distribution of weather maps, and the employment of other methods for rapidly diffusing, for public use, the information had at this office, have been continued for the year ending June 30, 1879. The purpose had in view by this regular distribution has been to induce an effort on the part of those examining the different charts and papers to foretell to some extent the changing weather for themselves. The official reports of the office relate to districts, at special localities in which districts the local indications may point to modified conditions. These local studies are useful also in many ways which space here would fail to describe. The expectation of the office has been well realized in this regard, and in many places there are among the citizens and business men careful students of the data daily symbolized, who use their own judgment to determine to what extent the conditions announced for the district will prevail at the places in which they may be, or consider approaching changes foreshadowed by the symbols upon the chart, but which are yet too remote to be announced as indicated. Investigations of this character ought to be encouraged.

The instruments prepared for local use (the weather case), and before referred to, will greatly aid such studies.

For a number of years past the attention of the office has been given to the subject of the preparation of a weather chart of such character as to appear printed in the newspaper journals throughout the United States. Charts of this character have been much sought for as aiding such studies as those just described above. The popular demand has been pressing. The office has fully appreciated the propriety of the demand and the value of the results to be had from the study of such charts could they be made to appear simultaneously in the different cities.

The work has been surrounded with unusual difficulties. The preparation of newspaper weather charts is not difficult, and such charts have long since appeared in some of the prominent European cities. The

journals in which these charts have appeared have been located, however, in the city in which was the office at which the meteorological charts had been prepared. It was not of record that a weather chart, prepared at any central office in Europe or the United States, had been so arranged for that it could be telegraphed in such form as to appear in the lines of its charting simultaneously in the journals of different cities, each city widely separated from the others, and this telegraphing and printing so rapidly done that the map might accompany the printing at any city of the data for the day, from the study of which data the map itself had been charted at the central office in some other city. The duties of this office are of such a nature that all of the chart-telegraphing must be based upon plans which will enable all of the conditions thus stated to be filled. An attempt to transmit journal charts of this description to answer such a purpose was made at the time of the Centennial Exhibition of the United States, when a daily weather chart to accompany the daily weather report issued daily at that Exhibition was telegraphed each morning from the office of the Chief Signal-Officer at Washington to the station of the Signal-Service exhibit in the Government Building at the Exhibition at Philadelphia, and appeared each day as the official weather-chart issued in separate copies at the Exhibition and also in the columns of a daily journal there printed for daily issue.

These charts were transmitted by process of autographic telegraphy which could not be effective at great distances. They required special instruments. Within the year past the studies and experiments conducted at this office and having relation to this subject have resulted in such plans that it is now found not difficult to transmit to any city which can be reached by telegraph, and without the use of special telegraphic instruments, such data as will permit the charts prepared in the office to be exhibited in any city or cities to which the data are sent, in chartings precisely similar, of any size, and to appear printed in the columns of the daily journals at the same time that the forecasts had at this office, from the study of the original chart, appear printed in the same journal.

The difficulty no longer exists as to the telegraphic transmission of the chart. On May 9, 1879, the issue, daily, of a chart so transmitted by telegraph, from Washington, was commenced in the *Daily Graphic*, a journal printed in New York, and this issue has been continued daily. The processes are not yet considered perfect. It is hoped to obtain more satisfactory results.

It is not necessary to dilate here upon the advantages to result from the power of transmitting to any number of places and to any distance at which telegraphing is possible, with the rapidity of a telegraphic dispatch, copies of the charting of the weather conditions over any extent of the earth's surface, the copies exactly similar and made at any central office at which the proper data have been concentrated. In this connection the Chief Signal-Officer makes special acknowledgment of the services of Lieut. H. H. C. Dunwoody, acting signal-officer and assistant, whose continued experiments have contributed much to the success attained.

The forms of the bulletins heretofore referred to as those published daily for the use of farmers, of the special bulletins issued for the use of seamen, for the river reports, for the canal reports, for railway bulletins, and for the varied interests which the information borne upon the bulletins is intended to benefit, change gradually with increasing knowledge and facilities. Each form has its object. The number of bulletins issued



a station is closely scrutinized and is reduced to the smallest number which can be wisely used.

Publication of the Monthly Weather Review and of the Weekly or Chronicle has been continued during the year. The monthly Reports of the Review are given in the appendix. (Papers 30 to 41.)

The scope of the Monthly Review has become co-extensive with the number of reports received both by telegraph and mail, all of which are made use of for reference, and a study of which enters necessarily into the preparation of each review. The collection of material for the Review permits also the study of especial storms, descriptions of or relating to which are given in the local journals of the region over which they pass, or in the shipping news communicated by vessels entering them at sea. The charts which accompany each issue of the Review exhibit the uses made of meteorological data. Each of these issues contains to some extent the reduction of data first chronicled on two hundred and forty separate study-charts for the month. It will be better understood how much this monthly reduction simplifies the work of generalization for the year. The Review exemplifies also, to a great extent, the consideration of the great mass of data before men are entering upon the files at this office. Each issue of the Review contains, under the head of "Notes and Extracts," a brief summary of current meteorological intelligence, compiled from the publications received at this office, and by which the marked advances in meteorological science are readily brought to the notice of the numerous officers and gentlemen co-operating with the service. The section added in 1877, under the heading of "International Meteorology," has been greatly increased in extent and importance during the year just past. Additional charts embracing the northern hemisphere, now accompany the Review and may be found referred to and described in the text of the Reviews under this heading. The wide circulation given this Review meets, in a large measure, the popular wish expressed, here and in foreign countries, for general information prepared at this office, while the receipt of a copy of the Review by one of the hundreds of the voluntary observers, now its contributors, at points extending in their range around the earth, is accepted by them as at once a sufficient acknowledgement of, and compensation for, the labor of making their daily reports. It is an advantage of the chart issues of the Review that they are continued from month to month and thus enable the meteoric conditions existing upon the earth's surface to be studied continuously and in a regular sequence.

The preparation of the matter for the publication of the "Synopsis, Summary, and Facts," commenced in 1872, has been continued.

The twenty-three volumes of the bound Daily Bulletins, with accompanying charts, had been issued up to June 30, 1879, and other volumes are expected to follow as rapidly as they can be obtained from the

the volumes, issued in sequence, one for each month, contain the summary of all the tri-daily telegraphic reports received at the office from the stations at which such records commenced; the tri-daily charts, upon the basis of which each report was on that day issued, together with a summary of the "facts" or meteoric conditions which subsequent reports show as actually existing during the time and in the district for which each forecast was made. It will be readily noticed that the summary in these volumes, at once condensing and checking the bulletins thereon, afford a meteorological record as compact as ought to be desired for especial researches, or for generalizations to be based upon the extended series of meteorological observations. The volumes them-

selves are useful for purposes of exchange, and bring to the office publications sent in return exchange, fully equaling their value. They constitute a meteoric record more full, perhaps, than any other now issued.

It was estimated in the last annual report that by the publications of this office, which have been above referred to—by the cautionary signals displayed by day or at night on coasts or at ports in times of probable danger; by the announcement of probable changes of weather in the Synopses and Indications furnished thrice daily to the press; the Farmers' Bulletin exhibited at so many villages and hamlets in the interior; the river and canal reports made with reference to river and canal interests; the bulletins and data exhibited at all the great cities and ports; the symbol-maps displayed in boards of trade rooms, and rooms of chambers of commerce; the Weekly Chronicle and Monthly Weather Review furnished to agricultural societies, commercial associations, and correspondents of the office; the daily weather maps; the monthly charts; and, finally, the charts condensing the results of years of observation—the information emanating from this office was received in some form daily at not less than one-third of all the households of the United States.

To this wide diffusion there has been added since the date of that report, the increased circulation had by the twelve hundred railway-bulletin stations heretofore referred to.

As hitherto related in this report, while treating of the subject of international meteorology, the work of the office reaches later, by its publications, nearly every prominent establishment in the world. It is considered that it contributes to the world's work published material valuable now, to be more so in the future, and sufficient of itself to compensate for the whole cost of this service from its commencement.

The different reports of the office, of which mention has thus been made, continue to be favorably received in the communities for which they have been furnished. Their uses are acknowledged by commercial associations and other official bodies.

The regular daily publication of the reports of forecasts by the press, now continued for nine years without cost to the United States, is considered as an evidence of their usefulness and of the favor with which they are received by the communities for which they are intended.

The office continues to be in correspondence, in reference to its duties, with committees appointed for the purpose by the boards of trade and chambers of commerce of the principal cities in the Union, and also with a large number of agricultural societies.

Permanent committees, appointed by boards of trade, chambers of commerce, &c., have been in co-operation with this office since 1877. These committees inspect, in compliance with the request of the Chief Signal-Officer, the local offices of the service at the places in which the committees may be appointed, and report monthly to this office upon the condition and utility of the service in their vicinities. The boards in this way at once co-operate with this office and share the responsibility for its success.

The resolution upon which these committees were established, as adopted by a number of the prominent associations of the United States, is as follows:

*Resolved*, That the meteorological committee of the board of trade (or chamber of commerce) shall be a permanent committee, and that the names of the members, and any changes in membership, be, in each case, formally notified to the Chief Signal-Officer of the Army. The committee will confer with the Chief Signal-Officer and will bring before the board (or chamber) all matters requiring its action, as relating to, or needed for, the improvement of the Signal Service.



The organizations which have adopted this resolution are enumerated in Paper 42. There are rules for the government of these committees, together with the form of reports they are desired to furnish monthly.

The appointment of these committees affords at once a board of reference, to which questions of local interest may be referred for their views, and provides an authorized source from which this office may learn of its successes or failures, and be thus enabled to direct its efforts in the several localities. It furnishes also a local supervision by parties interested themselves through their personal interests in the successful discharge of the duties of the service, and who will strive, for this reason, to best advise how that success may be attained.

The services of these committees have been found to render important aid to the work of the office. The supervision had by them is very necessary, and has had a good effect. Their duties involve a responsibility which has been appreciated by the members of the committee.

A list of disasters upon the lakes, comprising those only which have resulted from stress of weather, during the year ending June 30, 1879, compiled by Sergeant William Finn, Signal Corps, U. S. A., in charge of the Milwaukee station, is given in Paper 43.

Sergeant H. J. Penrod, Signal Corps, U. S. A., furnishes a report upon the Waterborough, S. C., tornado, of February 16 and 20, 1879. (Paper 44.)

Paper 45 contains the names of places from which requests have been received for the establishment of signal stations, but at which stations had not been established June 30, 1879.

On the occasion of the transit of Mercury, May 6, 1878, a series of observations were made at the stations, and by observers and officers, of the Signal Service. The results were published, in tabular form, in the Monthly Weather Review of the office for May, 1878. A copy accompanies this report. (Paper 46.)

In the instrument room of the office one thousand one hundred and five meteorological instruments have been carefully compared with the official standards during the year ending June 30, 1879, and nine hundred and eighty-two have been issued during the same period. Experiments with different forms of self-registering apparatus have been continued systematically with the view of securing forms adapted to general use on station.

As in preceding years, attention has been especially directed to perfecting instruments to record, by electricity, at a distance; for instance, a meteorological instrument being located at the city of New York, to be so fitted with apparatus and electric wires attached that the action of the instrument at New York may be automatically registered on paper in Washington.

The regular weather reports have been received during the year over the wires of the Western Union, Northwestern and International Ocean Telegraph Companies. Seven hundred and twenty-four thousand five hundred and twenty-five cipher words of weather reports have been received at, and thirty-six thousand five hundred sent from this office during the year ending June 30, 1879. Seventeen thousand and ninety-eight telegraphic messages (exclusive of those sent and received by the sea-coast line), other than weather reports, were received, and nine thousand eight hundred and eighty sent in the same period. There were also received, during the same period, seven thousand four hundred and eighty-eight cipher words of special river reports.

The plans of working forms of telegraphic circuits, and the rapidity

of telegraphic work by them assured to the service have been sufficiently referred to in preceding reports. They have given satisfactory results throughout the year past.

The average time elapsing from the time at which the readings of the instruments have been had at the two hundred and ninety separate stations scattered throughout the United States and Territories, to that at which the reports based on these readings have been telegraphed to the press and to the distributing stations, has been one hour and forty minutes.

It has been mentioned in preceding reports, but it is proper to again call attention to the fact, as one of the consequences resulting from the organization of this office, that, by the use of ciphers, improved with the experience of years, the facility with which constant practice has rendered practicable the telegraphic work necessary for the reports, and the understandings arrived at with telegraphic companies, the annual cost of the telegraphic communications of the office has been reduced by many thousand dollars. As an actual annual saving, this must be considered as a saving to the Treasury of the United States of an equal number of thousands of dollars. In the early days of the duty the telegraphic companies overestimated the labor required for the service, and the difficulties to be encountered by them in discharging it with the regularity and the vigor demanded. With the long experience of years the difficulties of this nature have vanished.

With the plans now for nine years tested on this continent there has been found no difficulty in collecting with sufficient rapidity meteorological data had over the widest extent of this continent's surface, and reaching from the Atlantic to the Pacific Ocean.

The application of similar plans for the telegraphic collection of data for any similar purpose whenever undertaken by any government or combination of governments upon the distant continents, as those of Europe, Asia, or Africa, cannot fail to be attended with similar results.

The relations of the office with the telegraphic companies are now cordial everywhere. It has come to be recognized that when this office insists upon work at very economical rates, and sometimes upon unusual telegraphic facilities, it is compelled to do so by the plainest dictates of duty.

The duties of this office, as charged with the supervision of the telegraphic duties of the War Department, and especially responsible, when need be, for the prompt transmission and proper care of the messages of the President and Secretary of War, and other superior authorities, together with the recognized position of the Chief Signal-Officer, as the agent of the Secretary of War, in the control and management of the interior lines now constructed and worked upon the frontier, and connecting as well military posts and stations as the villages and hamlets of the advancing frontier populations, devolve upon the office many cares and the settlement of many and novel questions involving the relations of the United States and the different telegraph companies. In all these matters, the assistance and advice formerly given the office by the distinguished lawyers, then acting as special assistants to the Attorney-General, the Hon. William Whiting, at one time Solicitor of the War Department, and the Hon. Reverdy Johnson, formerly Attorney-General of the United States, both then acting as special assistants to the Attorney-General, have proven of the greatest advantage.

Few questions have arisen, or are likely to arise, which will fail to find their settlement in the lucid opinions and wise instructions prepared by these gentlemen.



With the increasing population of the country, the unusual progress of civilization in the interior west of the Mississippi, the multiplicity of the public business, and the habitually greater use of telegraphy in public affairs, render it more important that the dispatches of the superior civil and military authorities should certainly reach the persons to whom they are addressed, and be securely protected from inspection by improper persons. The gravest affairs may be complicated by the delay or the improper revelation of official telegraphic dispatches. The care of the office is always given to this protection when informed that it is desired.

The relations of the office with the different telegraphic companies enables it to secure, in time of need, a rapidity and a certainty of transmission of particular dispatches, which may especially need such action, perhaps not to be had by any other agency. The experience already had in the management of frontier lines, under the novel circumstances in which those existing upon the frontier have been placed, has afforded such suggestions as to plans of working them as to warrant the belief that, as facilities permit, they will compare favorably in the rapidity of their work with those existing wholly within the limits of civilized and settled regions.

The increasing use of the United States lines for commercial purposes, as they extend into the interior and upon the frontiers, into regions the development of which they greatly advance, place upon the wires many important messages entitled, as is matter passing through the mails of the United States, to official protection.

The sea-coast service of the Signal Service, in connection with the Life-Saving Service, has been referred to and described in preceding reports. The total length of the sea-coast lines constructed by this office is now six hundred and ten miles. There is left for this report little more than rehearsal. The coast lines are connected with this office by leased wires from Cape May, Lewes, and Norfolk. The telegraphic lines, reaching from Sandy Hook to Cape May, from Cape Henlopen to Chincoteague, and from Norfolk by the way of Cape Hatteras to Wilmington and the mouth of Cape Fear River, on the most frequented and in some places the most dangerous coasts of the United States, have been continued in operation. The stations upon these lines are occupied and the telegraphic lines are operated by enlisted men of the Signal Corps. (Map 22.)

The act of Congress requiring this service contemplates the establishment of signal stations at life-saving stations and light-houses at points along the coast in such manner that the coast and sea in their vicinity may be at once kept under observation, warning of approaching storms be given to vessels within signal distance, and information of disasters and other incidents occurring be rapidly conveyed to the chain of life-saving stations, to light-houses, ports from which aid may come in case of need, and to this office.

These lines and stations are on the sea-coast itself, and in positions whence they command a view of the sea, and where they can have knowledge of disasters to occur from shipwreck. The reports of the weather conditions and of the state of the sea had by them, and not attainable in any other way, are necessary. Vessels passing in view can be at once warned by signals of coming danger, or be communicated with by signals, and can be aided if in distress. The telegraphic wires connect each station with the War Department.

It is an advantage of telegraphic lines thus managed and worked by the force of the Signal Corps, that the breaking of the wires at inlets or in

violent gales need not break the communication along the coast. In cases occurring during past years, messages have been transmitted for weeks together over extensive breaks of wire lines reaching past inlets by means of the usual day and night signals with flags and torches. Similar methods may be used in the instances of broken lines in the interior.

The enlisted men at these stations are taught to take and report meteorological observations, and, as signal men, are practiced in both the Army and Navy codes, in the usual semaphores, and in codes of permanent flag signals, to enable them to communicate with vessels of any nationality. The service has proven its usefulness in the cases of disasters to shipping and for the meteorological purposes for which it was established. It has been firmly established by its utility.

The sea-coast service stations in operation are located at Sandy Hook, Barnegat, Atlantic City, and Cape May, N. J.; Norfolk, Cape Henry, and Station No. 3, Va.; Kittyhawk, Cape Hatteras, Portsmouth, Cape Lookout, Fort Macon, New River, Sloop Point, Wilmington, and Smithville, N. C.

The constant changes occurring in the width of the numerous inlets across which the line upon the coast is carried by cables between Cape Hatteras and Wilmington, the character of the outer beach, the ground land upon which the lines could be placed, the destruction of portions of the lines and changes in the coast itself, caused by storms, have made the maintenance and operation of the line south of Cape Henry a work of difficulty.

It is not necessary to explain at length the importance of a service of this character on our sea-coasts. The reasons for its maintenance and the benefits to be expected from it are manifest. The commerce which approaches a coast on which a thorough sea-coast service exists, is spared disasters, in comparison with the cost of which the cost of the service is little.

The watch kept by the service and the prompt transmission of a few messages have, in time of danger, saved life and property.

It has been a source of complaint among the seafaring men on all the coasts on which storm-signals have been attempted to be displayed, that while it might be learned by vessels lying in port and from the display of such signals, with reasonable certainty, whether or not a storm was so impending as to render it unsafe to risk exposure at sea, there was no plan of storm-signals devised or devisable by which it could be communicated to vessels themselves actually at sea, and in sight of the stations, beyond the mere fact that a storm was threatening, and from what direction it was to be expected. It was not possible to advise what coasts it would be dangerous; whether or not any particular voyage might be continued in safety, or when and where shelter ought to be sought. The fortunate connection had by this office by means of telegraphic lines with all of its sea-coast stations has lessened these difficulties.

On February 4, 1878, an order was issued by which are announced the stations of the service prepared to hold communication by the international code of flag-signals with vessels of any nation at sea coming within the proper signal distance. It is so arranged that any question as to weather changes anticipated so signaled from the vessel to the shore station is immediately transmitted by telegraph to the central office, whence prompt reply is ordered.

This reply, on reaching the coast stations, is signaled by flags, if necessary, to the inquiring vessel. It is possible thus to gain any needed information without landing a boat. It does not appear how a system



storm-warning or coast-signaling can be given a greater scope than is arrived at by this process. The instance may be imagined, for illustration, of a vessel sailing from New York for a southern port and making inquiries off the Capes of the Delaware whether it will be safe to pass Cape Hatteras, and advised from this office in reply to the inquiry transmitted to this office that a storm at the time is moving near Hatteras and to take shelter at the Delaware Breakwater until the disturbance shall have passed northward. In the occurrences of each year there have been instances in which steamers moving along the coast have conducted their voyages from port to port upon the answers to special inquiries addressed from the ports in which they might be to the office. There have been instances in which such special inquiries have been signaled from the vessel to the station telegraphed thence to the office and the telegraphic answer signaled again to the vessel. With proper appliances such plans of communication might be established along the extent of the coasts of the United States.

In the last annual report several disasters were described as occurring upon the Atlantic coast, and the action of those of the Signal Corps, occupying the stations upon the coast, was related at some length to illustrate by the different incidents the character of the especial service it was expected to render. Since the date of that report several severe storms have swept the same coasts. It is since that report, that the systems of display-stations established by this office has rendered it possible to exhibit warning signals at almost every navigable inlet. There have been no disasters of magnitude to record. The hope may be indulged that this decrease in the number of disasters has been in part due to the more extensive display of warning-signals referred to, and in part to the greater attention paid by shippers and seafaring men to the warnings.

A single illustration is given as exhibiting the duties of the service at sea-coast stations, more pleasant than those connected with disasters.

Among the signals to be displayed at these stations on occasions of need, is one of—"You are standing into danger," to be shown when vessels not sailing in safe courses are seen near the land. In the month of September the steamer Hampton, commanded by Captain Stark, was running down the coast, not in danger or likely to be, as the route was perfectly known to the commander. The steamer had, however, as seen from the shore, the appearance of running into danger on account of the nearness with which she approached the land. The captain, who well understood the signal duties at coast stations, was explaining them at some length to other officers who were with him, when, as they discovered a station on shore, they saw several flags rise fluttering above it.

With a telescope and the danger or distress signal circular, furnished at the different ports to vessels taking their clearances, the flags were quickly translated, "You are standing into danger."

The interrupted narrative of the captain receiving thus a prompt and satisfactory illustration, the steamer saluted the station, and recognizing the signal stood out to sea that she might not cause further and unnecessary anxiety to those on duty on shore.

There has been added to the sea-coast line during the year, as an auxiliary, a telephonic line, extending from life-saving station No. 12, where the signal station at Kittyhawk is located, to the signal station at Cape Henry, and connecting the intermediate life-saving stations, a distance of about sixty-two miles. The life-saving crews at the stations on the line soon acquired, under the instruction of a sergeant of the Signal Corps, a familiarity with the use of the telephone instrument that ren-

dered communication comparatively easy between any of the stations on the sixty-two miles of wire. This communication has at times been very serviceable. When the bark Admiral was wrecked near Repair Station and life-saving station No. 5, March 3, 1879, a private of the Corps established a telephonic station opposite the wreck, and by this means warned the adjacent life-saving crews of the disaster. It has proved of value on other occasions. The line is in immediate charge of a sergeant of the Signal Corps, and is inspected by him monthly. It is examined also by the repairmen of the Signal Corps, who regularly patrol the shore in their care for the permanent line.

The cables at the following-named inlets have been lengthed during the year: At New Inlet, one hundred yards; at Ocracoke, two hundred and twenty yards; at Old Topsail Inlet, fifty yards; at Barnegat, ninety-eight yards. A new cable, three hundred feet in length, was laid across the Cape Fear River, at Wilmington.

The total number of messages received over the sea-coast line during the year ending June 30, 1879, was eight thousand two hundred and ninety-six; the total number sent in same period nine thousand five hundred and fifty-three, or a total of seventeen thousand eight hundred and forty-nine messages received and sent; which would have cost, at regular tariff rates, eleven thousand five hundred and forty-six dollars and ten cents.

The Chief Signal Officer urges, as in preceding years, the maintenance of proper equipment, extension, and rapid working of the sea-coast lines and the sea-coast service. The temper of the nation can well be judged from the experience had in the instances of the Huron and Metropolis disasters. There is no thought on the part of the people of any parsimonious economy nor tolerance of delay in the impatience with which they demand, on occasions of disasters, that succor shall be given to any imperiled life on the instant without consideration of cost. There is no question of the general joy with which every report of successful effort in this direction is received. There is no time for slow-paced messengers when disasters are announced.

Whatever the difficulties of maintaining these lines practically on the sea-coast itself, and where the beaches and lines upon them are sometimes swept away together by the surge, the lines must be maintained. The saving of a single ship or of a single life compensates the cost of repairs. The fields of usefulness are so wide that it would be criminal to turn from them.

If wooden lines fail, as they may on the coast, there is every reason to believe the iron lines will not. Orders are now issued to substitute as rapidly as possible iron for wooden supports. One hundred and fifty miles of "iron line" are now standing on the coasts. The records of the coming year will show whether the results expected from these lines are overestimated. The time is not far distant when the possession of a coast not covered by sea-coast telegraph, not guarded by a sea-coast storm-signal and signal service, and not supplied with the force and means of aid at life-saving stations, will be held as much an evidence of semi-barbarism as is now among civilized nations the holding of any national coast without a system of light-house lights.

The description of the sea-coast service has been made minute in this and in preceding reports because it is desired to show that a force of trained soldiers doing a land duty on shore, displaying signals hoisted on land though answered from ships; watching, as sentinels, each his special "beat" of sea and shore; telegraphing messages by electric wires to summon aid, or telegraphing them by the same flag and torch signals



they use in war when the lines are gone; erecting and keeping up their own wire lines of telegraph; displaying storm warnings by day or at night; making the regular meteorological observations, that the warnings may be ordered—in effect, a regular sentinel force to warn and to aid in any danger, all in strict military subordination to each other by their grades, and all to the central office, are a force of soldiers as usefully employed for purpose of peace, and as ready by training for war, as a force can be kept.

There is devolved upon this office by law the duty of providing all signals to be officially displayed as coast signals, or recognized as such on the coasts of the United States.

To carry into effect the provisions of this law, there was issued from this office in January, 1878, a partial code of danger or distress signals to be used and recognized anywhere on the coasts of the United States, where there may be sea-coast stations of the Signal Service, and by official co-operation of the Life-Saving Service, to be organized also at any life-saving station. Copies of this code are furnished gratuitously to every vessel, of whatever nationality, taking clearance at any of our principal ports, and to coasting as well as other vessels upon application to this office. It is the aim to permit no ship within the protection of the United States, within its ports or upon its coasts, to be in case of danger or distress without the means of communicating with the land or with the parties whose duty it may be to aid in the rescue. A further simple code of night signals is in preparation.

In pursuance of the acts of Congress authorizing the construction and operation of telegraphic lines in the interior and upon the frontier, for connecting military posts and stations, and for the protection of the population from Indian and other depredations, officers and enlisted men of the Signal Corps have been continued upon these duties. The lines in Arizona, New Mexico, and upon the Texan frontier, hitherto provided for, are completed. The lines in the Northwest, for which provision is made, are pushed rapidly forward. The work of construction has been in large part done by working parties furnished by the active co-operation of department commanders. A total length of three thousand nine hundred and twenty-four miles of frontier line is now operated and maintained in the care of officers and enlisted men of the Signal Corps. (Map 22.)

The uses of the frontier telegraph lines passing through the Indian country, as employed in military operations against war parties of Indians in motion, as well as their uses in advancing the progress of civilization by the safety and sense of protection they give to settlers near the scattered hamlets or military posts, have been before referred to. A telegraph line well worked forms one of the most efficient of barriers against the raids of Indian war parties. The country on the frontier through which such lines pass has but few points at which water can be had. The posts occupied by the Army are scattered along the line at intervals of several hundreds of miles. The object in view, with Indian war parties, is to pass between the posts and settlements without disturbing any of them; and they very much dread to leave any danger in their rear, or to so alarm the country as to cause their retreat to be cut off in their return toward the region occupied by their tribe. The existence of the telegraph line enhances both these dangers. It is useless to break it as the parties pass toward the scene of their incursion, for this alarms both the posts of the settlements on both sides of the break, and brings repairmen and guards at once to the point of the break and upon their trail; nor does it stop communication between the posts, for mes-

sages may be sent circuitously by other wires perhaps covering hundred of miles of distance around the point at which the line has been disabled. If the wire is not broken when the trail passes the line, the troops can of course be very readily called upon whenever or wherever the parties may be discovered. But even if the line is passed safely and the trail not detected, the danger the electric wires cause is not ended.

Wherever the party may strike, if the blow falls near any settlement or station connected with the telegraphic network, the alarm becomes in a few hours general. The troops on the line they have just passed know there is a war-party in the field; other troops and other settlements can be aroused. The line of the Indian retreat, the points the must pass to reach water, are approximately known, and while the pursuit goes on in the field other forces can occupy the passes and points in advance of the flying tribe. There can be no constructions more important for holding a frontier or protecting the first steps of advancing civilization than the telegraph lines. In instances occurring in Texas, New Mexico, and Arizona the movement of troops and of material, directed by telegraph, upon alarm sent by telegraph from settlements upon the frontier system of lines, has been so timely as to have attained results which could not, without the rapid action made possible by the lines, have been hoped for. How much of life and property have been saved from attacks thus guarded against, which might else have been made on defenseless communities, can be conjectured only.

From each of the stations on the telegraph lines thus in charge of the Signal Corps, a daily meteorological report is had and used, the whole forming a valuable portion of the office data each day discussed. The lines thus doubly useful are economically and successfully conducted. The saving in the cost of reports and the sums received for commercial messages make the lines in part self-supporting.

The existence of the lines in the interior of Texas has long permitted warnings to be exhibited on the coast of that State where they were before impracticable. The lines in the Northwest will permit a series of reports not otherwise attainable, the study of which is of the first importance to a proper care for the commerce of the lakes and to other great interests east of the Mississippi.

Appropriations made by Congress have permitted work to be continued, and to be pressed with rapidity upon telegraphic lines extending westward in the vicinity of and covering the northwestern frontier. These lines mentioned as necessary in preceding reports of the Chief Signal-Officer are already so progressed that there is reasonable anticipation that telegraphic connection will be established with lines extending eastward from the Pacific coast within the coming year. The lines provided by this legislation are of the first importance for the protection and development of this frontier and of the regions through which the lines pass. There is no region in which the proportional increase of values, or the number of enterprises undertaken, have been greater during the year closing with the date of this report.

Fewer difficulties than were anticipated have been encountered in the construction. It would be difficult, after the experience of the service in line constructions in Western Texas, parts of New Mexico, and Southern Arizona, to encounter any which would be held to render such constructions impracticable. The adoption of iron supports makes it possible to carry a line over any ground on which the supports can be made to stand.

The force of the Signal Service will not enable it to successfully o



the lines already contemplated in existing legislation without additional details.

*Arizona division.*—First Lieut. C. A. Booth, acting signal-officer, has been in immediate charge of the lines in this division, pursuant to Orders No. 46, A. G. O., February 28, 1878, and instructions of the Chief Signal-Officer. The total length of line now in operation in this division is nine hundred and thirty-four miles. There are seven stations, from twelve of which full meteorological reports are received by telegraph. The lines have undergone general repairs twice during the year. The total receipts of the line during the year ending June 30, 1879, were twenty-five thousand seven hundred and seventy-one dollars and three cents, of which amount thirteen thousand three hundred and eighty-one dollars and three cents were receipts for this line, and eleven thousand four hundred and eighty-five dollars and seventy-one cents were received to be paid to other lines. The amount of official business not done for the same period was, estimated at regular rates, nine thousand six hundred and forty-six dollars and fifty-four cents.

The following stations were in operation June 30, 1879: Campo, Cal.; Yuma, Ariz.; Burkes, Ariz.; Florence, Ariz.; Tucson, Ariz.; Fort Lowell, Ariz.; Tres Alamos, Ariz.; Fort Bowie, Ariz.; Fort Grant, Ariz.; Fort Thomas, Ariz.; Fort Apache, Ariz.; Phoenix, Ariz.; Wickenburg, Ariz.; Fort Verde, Ariz.; Prescott, Ariz.; San Diego, Cal.

Additional stations have been opened during the year. The lines in Arizona are maintained through a difficult country. The work of erecting iron for wooden supports has been commenced upon the lines in this division.

The following named stations were inspected during the year: Campo, Cal., during August; Yuma, Ariz., September; Burkes, Ariz., September; Florence, Ariz., September; Tucson, Ariz., September; Fort Lowell, Ariz., September; Tres Alamos, Ariz., September; Fort Bowie, Ariz., September; Fort Grant, Ariz., September; Fort Thomas, Ariz., September; Fort Apache, Ariz., October; Phoenix, Ariz., October; Wickenburg, Ariz., October; Fort Verde, Ariz., October; Prescott, Ariz., October; San Diego, Cal., August.

*Mexico division.*—First Lieut. James Allen, acting signal-officer, has been in charge of this division during the fiscal year ending June 30, 1879. The total length of line now in operation in this division, 486 miles.

The work of extending the line from El Paso, Tex., to connect with the lines of the Texas division, at a point 100 miles southeast of that place, commenced November 1, 1878. The connection was made on February 1, 1879.

The line from La Mesilla through to Silver City and Fort Craig received thorough repair during the year. Minor repair trips have been made by operators, repair-men, and details of troops.

There are twelve stations upon this line, at six of which full meteorological observations are taken and telegraphed daily.

The following stations were in active operation June 30, 1879: Los Angeles, N. Mex.; Fort Craig, N. Mex.; Los Cruces, N. Mex.; La Mesilla, N. Mex.; Fort Bayard, N. Mex.; Silver City, N. Mex.; El Paso, Tex.; Terque, N. Mex.; and Santa Fé.

The total receipts of the line during the year ending June 30, 1879, were one thousand four hundred and thirty dollars and eight cents, of which amount five thousand nine hundred and ninety-seven dollars and thirty-three cents were receipts for this line, and three thousand four hundred and thirty-five dollars and eighty-one cents were received to be paid to other lines.

hundred and thirty-two dollars and thirty-five cents were received to be paid to other lines.

The amount of official business not charged for the same period was estimated at three thousand nine hundred and ninety-eight dollars and sixty-eight cents.

The following is the record of inspections made of stations on this line during the year by Lieutenant Allen: Los Lunas, N. Mex., during October, 1878, and April, 1879; Fort Craig, N. Mex., October, 1878, and May, 1879; Las Cruces, N. Mex., October, 1878, and May, 1879; Lordsburg, N. Mex., October, 1878, and April, 1879; Fort Bayard, N. Mex., December, 1878, and May, 1879; Silver City, N. Mex., December, 1878, and April, 1879; El Paso, Tex., November, 1878, and April, 1879.

*Texas division.*—First Lieut. George S. Grimes, acting signal-officer, was in charge of this division from July 1, 1878, to October 15, 1878, when Second Lieut. C. A. Tingle, acting signal-officer, relieved him, pursuant to Special Orders No. 215, Adjutant-General's Office, October 15, 1878, and instructions from the Chief Signal-Officer.

During the year the telegraphic line has been extended from Fort Davis westward ninety-one miles, connection being thus established with the lines of the New Mexican division. This extension was completed and communication established February 5, 1879. The lines in this division have been maintained in fair working condition during year. Interruptions are reported to have been due to—first, the burning of wooden supports by prairie fires; second, the malicious destruction of insulators and wires with fire-arms; third, the falling of wooden line supports, the decay of which is very rapid in this climate. These heads of interruptions have been cited to show the numerous difficulties under which lines crossing the prairies of the interior are maintained. The damage to the lines from the first of these causes named has been great. The remedy has been to cut down the grass immediately around the line supports just before it has become so dry as to burn readily. This has entailed severe labor upon details from military posts in the case where the services of enlisted men have been used, and is expensive where citizen labor has been employed. The substitution of iron for wooden supports on such portions of the line as are endangered by prairie fires is the only effective remedy for the first of the interruptions above named. The second of the above-noted causes of interruption will lessen in number when legal proceedings are taken against the offenders under the laws of the United States. The crime committed is a felony. A reward has been offered for the arrest of criminals.

The substitution of iron for wooden supports has progressed in this division as rapidly as the funds at the control of this office have permitted. Up to the date of June 30, 1879, thirty-one miles of line mounted wholly upon iron supports had been constructed in this division, and three thousand four hundred and fifty iron supports had been used for repair purposes upon the different lines in the division. The substitution of iron for wooden supports in all cases of repairs will gradually change the whole character of the line. The total length of line comprised in this division is one thousand five hundred and ninety miles upon which there are twenty-eight stations, at twenty-five of which full meteorological observations are regularly taken and telegraphed.

The following-named stations were in active operation in the division June 30, 1879, viz: Denison, Pilot Point, Decatur, Jacksborough, Henrietta, Cambridge, Fort Sill, Graham, Fort Griffin, Coleman City, Fort Concho, Fort Davis, Fort Stockton, Fort McKavett, Mason, Fredericksburg, Boerne, San Antonio, Castroville, Uvalde, Brackettville, Eagle



agle Springs, Laredo, Rio Grande City, Edinburg, Santa Maria, Brownsville.

Following-named stations in the division were inspected during the year: Cambridge, October 1, 1878; Decatur, June 24, 1879; Henderson, October, 1878; Jacksborough, June 27, 1879; Pilot Point, May 4, 1879; Fort Sill, September, 1878.

Aggregate cash receipts from telegraphic tolls on messages transmitted over the lines of this division for the year ending June 30, 1878, were twenty thousand seven hundred and seventy-one dollars, of which fifteen thousand one hundred and thirty-five dollars and two cents were receipts for this line, and five thousand six hundred and twenty-five dollars and ninety-eight cents were received to be paid to other divisions. The amount of official business not charged, for the same period, was one thousand seven hundred and seventy-four dollars and twenty cents.

*Western division.*—In compliance with the act of Congress approved June 20, 1878, providing for the construction of a military telegraphic line from Bismarck to Fort Ellis, via the Missouri and Yellowstone rivers, connecting Fort Buford, Fort Keogh, and Fort Custer, and from Fort Custer to Fort Keogh, via Deadwood, the work of construction was commenced in August, under the supervision of Lieut. A. W. Greely, signal officer, superintendent of construction, assisted by details of engineers and men from various posts. The first line support was erected August 29. The line was opened for operation to Fort Keogh December 29, making a total distance of 646½ miles constructed in 114 working days. The line supports were, at the same time, erected for a distance of 12½ miles of line between Fort Custer and Fort Ellis. December 29, 1878, Fort Meade was connected with Deadwood, twelve miles distant, on the section between Fort Custer and Fort Ellis, and thence to Fort Meade—a distance of one hundred and eighty-eight miles—was completed on November 16, 1878, and was completed January 30, 1879.

December 29 Lieut. George S. Grimes, acting signal officer, succeeded Lieut. A. W. Greely, assuming charge of the work of construction. This officer still remains in charge. The work of construction on the lines in this division was performed with unusual rapidity in the face of great difficulties.

Following stations were in active operation November 30, 1879, Bismarck, Fort Stevenson, Fort Buford, Fort Meade, and Deadwood, Dakota, and Fort Keogh, Fort Custer, and Fort Ellis, in Montana; Coulson, Mont.; Ferry Point, Mont.; Hunter's Springs, Mont.; River, Dak.; Little Missouri, Mont.; Morgan and O'Brien's Ranch, Powder River, Mont.; Rosebud, Mont.; Stillwater, Mont.; Terry's Station, Mont.

Lines were formally opened for commercial business March 15, 1879.

Important and considerable extensions of the lines in this division have been ordered, and the work of construction and the distribution of material is in a forward state. The extensions completed, and the necessary material for their construction has been procured, will, when completed, place in telegraphic communication with the general headquarters every military post, with the exception of Fort Dakota and Montana, and many important settlements in these States.

Helena, Mont., through which the projected extension of the telegraphic lines in this division will pass, to Fort Missoula is

about two hundred miles. The country is well timbered, and a line can be built to that point at a moderate cost. The advantages of telegraph line from Fort Missoula to the several military posts in Washington Territory and Oregon can hardly be overestimated.

Total length of line in this division June 30, 1879, nine hundred and twenty-one miles.

The aggregate cash receipts from telegraphic tolls on messages transmitted over the lines in this division, from 15th to June 30, 1879, were one thousand seven hundred and seventy-nine dollars and seventy-four cents, of which amount eight hundred and forty-eight dollars and seven cents were receipts for this line, and nine hundred and thirty-one dollars and four cents were received to be paid to other lines.

The amount of free business not charged for the period was estimated at one thousand two hundred and ninety-two dollars and twenty cents.

*Washington division.*—On December 28, 1878, the work of constructing line in this division was commenced. The work, carried on in winter was retarded by rough roads, severe cold weather, and frequent snow-storms. The parties employed were distant from any depot of supplies, without shelter for animals, the forage procured with difficulty. The transportation almost unserviceable for line construction. As late as the month of March it was reported almost impossible to distribute line supports along the route. The work of settling the line supports commenced at Dayton on May 1, 1879. For part of the route it was necessary to cut through rock. The span necessary to cross Snake River is one thousand one hundred and eighty-four feet long. On June 25 the line was completed to Lapwai (Fort Lapwai), and on June 30 the office was formally established at that station. The citizens of the various towns through which the line passed have displayed interest in the progress and materially aided in its construction.

The length of the line from Dayton to Lapwai is sixty-eight miles. At Dayton there is telegraphic connection to the Pacific coast.

Under the provision of the act of Congress approved March 3, 1878, the lines in the Northwest have been extended from Fort Ellis to Fort Assinaboine, on Milk River, to Fort Missoula; from Fort Lincoln to Fort Bennett, on the Missouri River; and from Fort Bennett to Fort Meade in Dakota Territory, a total distance of eight hundred and sixty-nine miles. It is hoped further to extend these lines to connect through Cœur d'Alene with the Pacific-coast system, now extending from Fort Lapwai westward, during the ensuing year. In the Texan division the lines have been extended from Fort Sill, Ind. T., via Forts Reno and Supply to Fort Elliott, Tex., a distance of two hundred and seventy miles.

This rapid extension of all the lines has been made possible by the energetic assistance rendered by the local military authorities, by whom the transportation of material has been largely furnished. The troops at the several posts have performed most of the manual labor of constructing the line. Without such help the small appropriation available would not have furnished the desired telegraphic communication.

The Chief Signal-Officer proposes, in the next annual report, to make mention of all officers who have been commended for services in the construction of these lines. The list is not yet complete.

The difficulties surrounding the work of construction and the management of these lines have been before referred to. At the inception the undertaking was a new one; the appropriations small; the country difficult; a force had to be provided and organized to work the line.



the lines themselves were in construction; the laws controlling were hardly understood; the service was subject to interference legal and to oppositions wholly unwise. It was not understood that services of this kind must grow slowly.

It is not considered often that the difficulties of the construction, and operations of these lines, limited to a single wire, extended hundreds of miles through wildernesses, in sparsely-settled territories without railways, and threatened always by Indians or other hostilities, are different from much greater and not at all to be compared with those of maintaining commercial lines, following railways, existing amidst of settled civilization, and with every appurtenance at many points, to move instantly by rail, along the lines, for their immediate restoration and repair, if they chance to be damaged. It is, therefore, from the anxious settlers in this wilderness and upon the frontiers that the most urgent appeals are forwarded, both that extensions may be maintained and that additional lines may be constructed. It is here they are located by law, and it is for the commercial development as well as the protection of these regions that the service of the greatest importance. It is an absolute necessity for the discharge of the duties of this office that these regions be penetrated.

The difficulties above referred to lessen. It is better understood in every year that systems of telegraphic lines to be worked at all times as a unit. The laws of the United States and the orders which have so determined are more closely obeyed. Illegal and unauthorized interferences are less frequent. It is better comprehended the necessity of conveying, as they may, commercial or official business from one extreme of the United States to another, ought not by possibility to be interfered with in their working by any subordinate authority.

The accuracy and rapidity of the working of these lines, made by comparison in these respects with other lines under different management, but in country similar in character, have given satisfactory results.

The working of the lines improves steadily. When it shall become possible, as it will with better knowledge of their usefulness, to station along the lines repair parties, sufficient in number and properly located, and to provide material at depots so distributed as to be easily accessible, there will be no reason why these lines should be disabled for other than very brief periods. It is impossible to protect absolutely from frequent brief interruptions any line constructed with a single wire. It is in view to double the wires as rapidly as appropriation and powers of the office will permit.

The fact that the special duties of this office require reports from all parts of all its lines three times daily in the regular discharge of its duties, affords opportunities for, and causes an inspection more frequent and frequent, perhaps, than that had on any lines not under similar supervision.

The use of iron supports, succeeding as it has under the tests to which it has been this year subjected, by the practical uses of such supports in lines actually constructed, has shown a great advance in line construction. It is difficult to estimate the importance to the United States of the service of a mode and material for line construction capable of being put in use and lasting everywhere.

The tests made with the telephone at this office and on the sea-coast have shown the fact that many posts and stations near main lines may have telegraphic communication over those lines which has been hitherto impossible.

There are no constructions more economical, or returning, by their more fully their value to the people and the Army of the United States than the electric lines now stretching among the frontier posts and settlements.

The office is again called upon to acknowledge the courteous and prompt aid with which the wishes of the Secretary of War have been met on the part of division, department, and district commanders, and the zeal with which the working parties of troops by them detailed have performed their duties.

In the different works of construction, important assistance has been rendered by Lieut. Gen. P. H. Sheridan, commanding Military Division of the Missouri; Brig. Gen. O. O. Howard, commanding Department of the Columbia; Brig. Gen. A. H. Terry, commanding Department of Dakota; Brig. Gen. E. O. C. Ord, commanding Department of Texas; Brevet Brig. Gen. Edward Hatch, commanding District of New Mexico; and Brevet Brig. Gen. O. B. Willcox, commanding Department of Arizona. The work would have failed in much of its success, but for the powerful aid.

The military results foreshadowed as to follow the construction and use of these interior lines are already in part attained. The reports of officers commanding campaigns, or employed in other operations, evidence at once the wisdom with which these added facilities for communication have been employed, and the success of operations to which the rapid communication so secured have, under their direction, contributed.

The legislation of Congress has evidenced the confidence of that body in the propriety of such works, by imposing upon the Corps more labor in the new line-construction than can, with its present limited force, properly performed. The want of skilled enlisted men can be but poorly supplied by temporary details. The Chief Signal-Officer recommends an increase in the enlisted force of the Corps as a measure of economy.

In closing this report the Chief Signal-Officer again refers to the frequent rehearsal of facts hitherto stated in preceding reports upon the service. The annual reports of the succeeding years, rehearsing, as they must, similar facts of organization and of service, become more closely repetitions of the preceding reports, to which are added, each year, statements of progress as relate to the year present.

The Chief Signal-Officer anticipates the best results to the Signal Service from the legislation of 1878. There could hardly have been an act wiser for the interests of the service or more just to the members of it. The favorable action of Congress has removed difficulties which have hampered the progress of the duty for years. If its work is permitted to go on as it has been planned, and is fairly sustained, it can hardly fail in continued success. There ought to be just provision for the permanent employment and grades of the officers of the corps. It is recommended this be fixed by legislation. It is hoped there may be no failure in the appropriation for the service of the amounts estimated for this year. They have been estimated with careful economy.

The progress of the service through the years of duty past has been attended with steady and satisfactory success. There is no longer question as to the useful preannouncement of meteoric changes. The plans extend more broadly in each succeeding year, by which to aid in every interest of commerce and of agriculture. The popular confidence and support have been unchanging and considerate. A world-wide struggle has been developed, and aims to attain results not contemplated a few



years ago as possible. The scope of practical usefulness increases with each year. The road grows broader and plainer as it leads towards success.

ALBERT J. MYER,

*Brig. Gen. (Bvt. Assg'd), Chief Signal-Officer, U. S. A.*

Hon. G. W. McCrary,

*Secretary of War.*

## REPORT OF THE BOARD OF VISITORS TO THE MILITARY ACADEMY.

SIR: The Board of Visitors appointed to examine the Military Academy for the year 1879 respectfully submit the following as their report:

The board was organized on the 3d of June by the election of Noah Porter, president; Dorman B. Eaton, vice-president; and Henry L. Abbot, secretary.

The following gentlemen were appointed by the president to serve upon the committees ordered by the board, the president being *ex officio* a member of each:

1. *On buildings and grounds, including barracks, mess, lighting, and hospital supplies:* General H. L. Abbot, Hon. E. Hale, Hon. D. B. Eaton, Hon. W. Windom.

2. *On fiscal affairs, including accounts, expenditures, and needful appropriations:* Hon. J. H. Blount, Hon. J. B. Gordon, Hon. E. Hale, Hon. W. Windom.

3. *On government, including organization, police, discipline, and drill:* Hon. J. B. Gordon, R. H. Anderson, esq., Rev. W. K. Hall.

4. *Education, including qualifications for admission, course of study, methods of instruction and examination, text-books and apparatus:* Hon. D. B. Eaton, General H. L. Abbot, Rev. W. K. Hall, G. W. Jones, esq., Hon. R. M. McLane, and C. P. Buckingham, esq.

A majority of the members of the board were in attendance during the examination of the first class, and several remained till the conclusion of the examinations of the remaining classes. The several committees visited the offices, buildings, and grounds, and carefully inspected their condition, examined the books of account and the methods of keeping the same, conferred freely with the superintendent, the commandant, and the other members of the academic board in respect to every subject of inquiry which was proposed, and attended with great interest at the military exercises, which are an instructive and exciting feature of the yearly examination. They were treated with courteous attention by all the officers of the post. Every part of the institution was freely open to their inspection. Their questions were answered with entire frankness. Those features in the organization and conduct of the institution which suggested any criticism or inquiry were freely discussed and explained, and the special difficulties which are incident to the management of a system of military education by the National Government were not disguised. The board encountered no inconveniences or difficulties in the discharge of their duties except such as were occasioned by the want of familiarity on the part of many of the members with the interior workings of the institution and with the duties incumbent upon themselves as Visitors. They were somewhat embarrassed by the want of certain facilities for the speedy organization of their body and the orderly and efficient transaction of business,

which was incident to their residence at an overcrowded hotel and to the strangeness of most of their number to one another, to the duties which were expected of them, and to the methods by which these duties could be satisfactorily discharged. They would suggest that it would conduce to the convenience of future Boards of Visitors if a compilation of the laws and important facts in the history of the Academy were prepared as a guide for their inquiries. Such a board ought not to be obliged to search volumes of pamphlets, some of which are not readily accessible, in order to gain the information which is necessary to the discharge of its functions. At best, the short period of time allotted to its sessions is severely taxed by the novelty of the subjects which its members are called to consider. These difficulties have been encountered by the Board of Visitors in previous years, and from time to time have been somewhat freely discussed. The question was more than once raised during our conferences whether the reappointment for one or two years of one or two members of a previous board would not facilitate the transaction of business and give greater weight and efficiency to the recommendations that are made. The Military Academy cannot expect and ought not to desire to be withdrawn from public scrutiny. At a time when all established institutions and systems of education are severely criticised, a system so old and peculiar as that of this Academy must encounter constant and often unfriendly animadversion. It will be challenged at every turn, and must be prepared to give an answer to every questioner, whether he be friendly or hostile. In such a condition of public feeling it may sometimes be difficult to decide whether superficial and ignorant criticism or indiscriminate laudation will do the greater injury. Any special occasion of jealousy towards it, whether political or military, cannot be entirely disregarded. In this condition of opinion it may not only be desirable but imperatively necessary that its theory of education should be thoroughly canvassed by the intelligent friends of education, that its merits should be vindicated and its defects should be freely confessed and exposed, and so far as is practicable be speedily remedied. It is in this spirit that we have conducted our examinations and made our inquiries, and as the result we submit the following statements and suggestions:

1. *Buildings and grounds, including barracks, mess, lighting, and hospital supplies.*

We find that the cadet barracks are, in general, well fitted for the purpose for which they were designed, but are insufficient to accommodate the corps. Several of the rooms are necessarily assigned to assistant instructors in tactics. Other officers are quartered in the cadet barracks by reason of the insufficiency of quarters for them elsewhere at the post. Such occupancy has been allowed for over thirty years. The consequence has been that for many years three cadets have been crowded into several rooms which are fitted for two only. To provide for the maximum number of cadets likely to be present on the 1st of September next one hundred and sixty (160) rooms would be required, were two allotted to each. The number of rooms at present available is one hundred and thirty-six (136), twenty-four (24) additional being imperatively needed. The board would urgently represent that although a few of the rooms are slightly larger than the others, none of them are sufficiently ample to accommodate three inmates, and that the reasons are manifold, especially in view of the arrangements within the rooms and also of the peculiar life of the cadets, why no more than two persons should be placed in a single apartment. The barracks were completed twenty-eight years ago, and at that time were sufficiently large; but the



classes have been considerably enlarged by the increase of the number of Congressional districts, and the time has come to extend the wing according to the original plan. We recommend that this be done immediately to the extent of at least *two* subdivisions, thus adding thirty-two (32) rooms. This extension should, as it easily may, be furnished with additional facilities for bathing in the basement; the present accommodations, though well arranged, not being sufficient for the cadets, especially considering their peculiar life.

The barracks are warmed by steam radiators and pipes which are connected with boilers placed in a separate building in the rear. This arrangement is defective in that it makes no provision for ventilation such as might easily be effected by the introduction of fresh and freshly-warmed air from without. We recommend that the radiators be placed in the recesses or spaces immediately beneath the windows, and that arrangements be made for introducing the air directly upon them beneath a second casing or false window-sill. If necessary, the chimney-flues may be fitted with pipes for steam to create a brisker upward current.

These barracks are lighted by gas, which is insufficient in quantity for this and the other needs of the post. Complaints have heretofore been made that the cadets have suffered in their eyes from the use of gas, and, although the burners have of late been improved, we learn that the complaints still continue. The paper subjoined in the appendix, marked A, furnishes all needed information in respect to the supply of gas and the unsatisfactory condition of the gas-works. The committee would submit that if there is no serious objection to the use by the cadets of student-lamps, this experiment should be made for the relief and preservation of their eyesight, and that pending the experiment the present gas-works should be kept in repair to supply the rest of the post.

Many of the rooms in the barracks require repainting and whitewashing. Their condition is at present far from being satisfactory in these and some other respects, but we are assured it will be improved during the present summer encampment.

The mess arrangements merit unqualified commendation. The building is well arranged and the table is furnished with plain but wholesome food. In accordance with a law of Congress passed in 1876, an officer of the Army was specially charged with the supervision of this important matter. The duty was devolved upon First Lieut. S. M. Mills, Fifth Artillery, and we desire to express our commendation of the manner in which the work has been performed. Under his personal supervision and management the cost has been reduced, and the quality and variety of the food, and the manner of serving it, has been much improved.

The present hospital arrangements exhibit evidences of scrupulous care and attention. For the ordinary needs of the cadets the accommodations are sufficient, though not of the first class; the apartments being neither roomy nor airy and the other appliances not the most convenient. The new hospital building is so far advanced that its plan cannot be essentially modified. Hence, although the building is liable to grave objections on the score of economy, we recommend the completion of that portion of it which has already been begun, leaving the ultimate use of the building to be decided hereafter.

The provisions for protecting the field batteries (which are used in the instruction of the students) against the weather are insufficient. We recommend that a sum not exceeding \$1,200 be appropriated for the erection of sheds for this purpose.



The grounds of the post are generally in an excellent condition. We recommend that the most liberal appropriations should be made and the most unremitting and attentive care should be exacted in promoting the growth of the trees by furnishing generous nutriment and also by cutting away any growth which is excessive or promotive of dampness, also in opening any thickets or undergrowth which might serve as hiding-places for any decaying or offensive matter. This last is of special importance in its relations to the health of the cadets while in their annual encampment.

2. *Fiscal affairs, including accounts, expenditures, and needful appropriations.*

The accounts of the disbursing officer and of the treasurer of the corps of cadets have been carefully examined by the committee designated for this duty, who report that they are kept in a satisfactory manner. They submit an abstract furnished by the disbursing officer of the receipts and expenditures for the year ending June 10, 1879 (Appendix B). This contains a statement of the amounts appropriated for the year under several heads and also of the amounts expended under the direction of the superintendent. They also submit a statement by the treasurer of the corps of cadets (Appendix C) of the receipts and disbursements on account of the same. They add also a special communication from the same officer (Appendix C), explaining the so-called cadets' quartermaster's fund and the cadet subsistence fund.

3. *Government, including organization, police, discipline, and drill.*

The board see no good reasons for recommending any changes in the laws and regulations which govern the institution. Their wisdom has been tested by time and experience and the necessities of the military profession and the soldier's life. They believe also that the traditions of the Academy, or its unwritten law, sustain and enforce the virtues of truth and honor with an energy and impartiality which deserve the highest commendation. They regret to be obliged to add that the virtue of courtesy toward the stranger and the unprotected, which has been generally accepted as emphatically soldierlike, is now and then grossly dishonored in the treatment of members of the newly-admitted classes. They are happy to find evidence that the present superintendent has sought to temper his military authority by a wise discretion in the administration of discipline, in such a way as to soften the rigors without weakening the force of military rule. They find evidence that he is sustained in this wise policy by the members of the academic board and believe that during the seventy years of the history of the institution there was never a time where its discipline was more wisely administered and the spirit and aims of the officers and cadets were deserving of higher commendation. At the same time they desire to reaffirm a truth, which is easily overlooked in any educational institution, perhaps most easily in an institution under military law—that the personal influence of the men who administer its instruction and discipline is of greater consequence than its regulations and its penalties.

There is one point in the exercise of discipline which needs to be carefully guarded and that is the authority of the academic board. So far as the authority or influence of this board is related to the instruction and examination of the cadets or the determination of their rank and place in the corps, its decisions should, in all cases, be final, it being understood as a matter of course that the superintendent concurs in the same. Whatever discretion any superior, civil, or military officer may find occasion to exercise, the mitigation or reversal of any of the decisions of the teaching corps which concern the intellectual perform-

nees of their pupils, or their rank or status as determined by the same, can only weaken the rightful authority of those who in such cases may be presumed to be the only competent and impartial judges. Even the recognition of the possibility of the interference of any higher authority can only be disastrous. Uncontrolled academic freedom of teaching and untrammelled academic authority in examination are the necessary conditions of academic success. The responsibility of the instructor to his military superior, and of the cadet to his instructor as an officer, should in our opinion never be interpreted in such a way as to interfere with the free and unchallenged exercise of those functions which are essential to the enforcement of intellectual discipline.

The perfection of the drill of the students at their daily parades and in their various military exercises deserves the highest praise. It is the most satisfactory evidence of the necessity and the value of the severity and constancy of the discipline to which the cadets are subjected from which there can be no exemption to any one who proposes to himself the career of an officer.

4. *Education, including the course of study, methods of instruction, text-books and apparatus, and qualifications for admission.*

The course of study is such as is generally recognized to be essential to a military education, and in its predominating features remains the same as that adopted at the foundation of the school. The mathematics, pure and applied, being the necessary foundation for engineering and gunnery, constitute the introduction and the staple of the curriculum. Engineering and gunnery are the special military applications of the same; and drawing, a necessary condition of every military science and art. Physics, molecular and molar, with astronomy, are so eminently mathematical as to seem essential to the finished mathematician, and without these sciences the material universe cannot be scientifically understood. As chemistry was gradually developed, its subtle mathematical relations, together with its concern with the materials used in ordnance, opened for it an important place in the course of study. The French language, being at once pre-eminently the language of military and mathematical science and the passport to European society, was naturally selected as the one language which was essential to the accomplished officer. When the relations of the nation to the Spanish-speaking peoples were actually or prospectively important the Spanish language was added. More or less provision was made at a very early period for instruction in ethics, history with military and international law, but never in any such proportion as the importance of each required till the somewhat recent expansion of the department of law. Chemistry brought in mineralogy and geology through the somewhat accidental, and yet not unnatural, conjunction of these departments which prevailed in the colleges, but geology does not bring any branch of natural history except mineralogy, while physiology, both vegetable and animal, were overlooked. The apparently accidental omission of these and other branches of modern science, and the designed omission of history, literature, and philosophy, are explained by the consideration that the course of study was designed to be in the main professional as contrasted with one that should be liberal; in other words, its original design was to train young men to be efficient and accomplished officers within a limited time, many of whom had received a very limited elementary education. Those who criticise or desire to alter it should consider the material which the instructors receive and the time allowed for molding it before they condemn its methods or their results. They should also bear in mind that it must do more than train



the intellect, and that its drill and manifold exercises are more than mere physical gymnastics, such as might be required for health or enjoyed as pastime, but that they involve fatigue, exposure, and the waste of a reserve of nervous energy which might otherwise be expended in intellectual activities. Most of all, they should remember that the pupils who are received are required to be masters only of the merest elements of a so-called English education, and need not necessarily have been subjected to any considerable intellectual discipline.

As a professional school, it must have a fixed and enforced curriculum. Whatever changes might be advantageously made in the studies pursued or in the time allotted to each, it is self-evident that every officer in the service needs to master all the studies which any curriculum can find room for, and that the genius of military life would require that he should be constantly measured with his fellows. Whatever advantage any student might derive from his previous studies or from his earlier discipline, would naturally appear in the easier and more thorough mastery of his appointed work, or in the prosecution of additional reading and study. It does not follow, however, because the Academy is necessarily a professional or technical school, that it does not also impart a very effective intellectual discipline. No intelligent man can doubt that it does who has observed the average cadet as he enters and as he leaves the Academy. While all this is true, it is a question which in the judgment of the board deserves serious consideration, whether the course of study might not be essentially improved in the proportions allotted to the branches now pursued, and by the introduction of other studies. They would suggest that the German language be substituted for the Spanish as being one of the foremost languages of science in all its branches, the military included, and as furnishing an excellent discipline for understanding and writing English with intelligent judgment. It would seem as though botany, zoölogy, and physiology, both animal and vegetable, were as instructive and as useful for the officer as mineralogy, and have almost as near a relation to geology; while it is essential that the prominent facts and the most important lessons of history should be wrought most thoroughly into the memory of every officer. We hail with great satisfaction the indications that general and military jurisprudence are recognized as necessary to the education of every graduate, and we trust that a special chair will very soon be permanently assigned to this department, to which the constitutional history of the United States might very properly be attached. We are constrained to add that although the severe mathematical discipline of the curriculum, in a certain sense, is also a discipline in logic, yet if it were possible to find a place for a thorough study of induction and deduction, with an ample praxis of the analysis and criticism of arguments, it would make the cadets better reasoners and writers; and if introduced before the middle of the course, might facilitate their progress in both scientific and liberal studies in the later years.

The arrangements for instruction are in many respects admirable. The division of the classes into small sections, including as they do never more than twelve pupils, each of which is assigned to a recent graduate as an assistant to the professor in charge of the department, the supervision and constant visitation of each section by the professor himself, with liberty at any time to take the work of instruction out of the hands of his subordinate, the ample time allotted to each exercise, together with the careful work required of every man and the weekly publication of his relative standing, the gradation of the sections as higher and lower, and the constant shifting of the cadets from one to the

other—all these arrangements, when constantly re-enforced by the fact that the cadet is an enlisted and paid employé of the nation which is educating him for its service, combine to make the intellectual discipline as efficient as can easily be imagined. The methods of recitation and examination correspond. Constant use is made of the blackboard, on which the student is required to *tabulate* in writing the heads of his work, and to illustrate it by the needed drawings and diagrams. The military bearing of the pupil, the alert and attentive attitude which is insisted on, the complete mastery of the topic which is waited for, the absolute self-reliance which is expected, are all that could be desired. It should be added that the exaction of a clear and complete exposition of any topic which is discussed, itself involves a rigid logical and rhetorical training such as compensates to a good degree for formal instruction in the construction of sentences, the selection of words and the arrangement of thoughts, and explains why with so little formal rhetorical instruction, the graduates of the Academy so frequently exhibit the best qualities of a good English style.

Notwithstanding all these advantages it may reasonably be questioned whether this rigid uniformity is not carried too far, and whether a greater variety in the methods and the subject-matter of instruction would not relieve the course from a wearisome monotony, and impart a higher interest in their work to both instructors and pupils—whether a greater variety in the subjects taught and in the manner of teaching would not make the system more elastic, more exciting, and more efficient, and at the same time impart still greater effectiveness to its discipline. We see no reason why instruction on a very great variety of topics should not be given by lectures from the very accomplished men who are selected as professors and instructors, nor why special efforts should not be made to relieve the strain and monotony of the mathematical and scientific curriculum by the discussion of a great variety of these miscellaneous topics in which all men of liberal culture are supposed to be interested. We are confident that whatever time might be required for such instruction would be more than compensated for by the greater elasticity of the minds of the students, and that the habits formed by reporting oral instruction clearly and methodically, would be recognized as in harmony with the excellences looked for in the accomplished officer. We are confident that were culture of this sort more distinctly recognized and more directly stimulated in the curriculum and the training, it would contribute to the intellectual activity of the young officers after they leave the Academy and enable them to add a greater variety to the brilliant contributions which they have made to science and literature. Were nothing more accomplished at first than two lectures for each week, during the four years of the course, on practical, historical, and philosophical topics, there would be no loss of time for the curriculum at present established, while the gain would be immense in its immediate and permanent value. The board would particularly recommend that a course of lectures upon hygiene should be delivered very early in the course, and that the instruction upon ethical and practical subjects now given by the chaplain should be supplemented by more formal lectures upon such additional subjects as would excite in the cadets the desire for general culture and stimulate in them a taste for reading by turning their attention to the many discussions which are now engrossing the minds of thinking men. While nothing can be more unsuited to the position of a military man than a heated partisanship with respect to the many speculative and political discussions of the hour, the partisanship of unreflecting and scantily informed prejudice, especially in a class of officials intrusted



with large prerogatives, is to be carefully avoided and guarded against. All lectures such as are recommended, it hardly need be said, should be followed by rigid examinations, either oral, or of the notes taken by the pupils, one or both, for which there is ample force in the numerous assistants provided for the professors.

The board would also recommend that immediate attention should be given to the inquiry whether more formal and systematic arrangements may not be adopted, in addition to those already provided in the schools of artillery, engineering, and ordnance, for the advanced education and culture of all the graduates of the Academy during the additional four years for which they are especially enlisted. They would urge that it practicable, special examinations should be held for all without exception once or twice during this term of service in studies and reading definitely prescribed, and particularly that special inducements to enlarged studies should be furnished to the assistants who are detailed for service at the Academy. They are gratified to learn that the superintendent has already initiated arrangements for voluntary activities of the kind last mentioned, and would welcome them as the indications and promise of more complete and formal efforts towards a systematic course of general and special studies for all the graduates.

The apparatus and appliances for instruction are in general all that are required, and in good condition. The department of drawing needs an appropriation for tables and other conveniences such as might be granted at any time on the recommendation of the superintendent. The departments of philosophy and chemistry, jointly, have pressing need of a thermodynamic motor, which they might use in common, and which would cost \$3,000. This might have been purchased long ago by accumulating the joint savings from the sums annually set apart to each of these departments for apparatus, did not a statute require that any portion of such appropriations which is not expended within the year should be covered into the Treasury. The board would also call attention to the necessity of special conveniences for systematic and thorough instruction in swimming as imperative and immediate.

Many of the criticisms and suggestions already submitted will have suggested the inquiry which has often been raised, viz, whether the subjects and methods of instruction can be materially improved so long as the conditions of admission and method of appointment remain unchanged. This inquiry has been the theme of frequent remark by the Board of Visitors and the friends of the institution, as also the kindred question, whether the time of curriculum might not be extended with advantage. In respect to the last inquiry, we would call attention to the fact that the experiment of a five years' course has been tried and abandoned more than once, and has apparently not justified the anticipations of its friends. It is also the deliberate conviction of many who are minutely conversant with the workings of the institution that the period of four years is long enough for an enforced curriculum of so severe and monotonous a character.

The methods of selecting and appointing new recruits and the qualification for admission which should be insisted on, open a wide field for inquiry. Your board have already adverted to the fact that a very considerable portion of the first year of the course must be spent in teaching the very elements of knowledge and in training to those intellectual habits which every elementary education more or less perfectly matures. This disadvantage is the more serious in view of the fact that the education, when complete, is necessarily very largely professional,



at the restrictions involved in a military *régime* cut off the cadets free companionship with young men of their own age. Moreover, it is unquestioned that those cadets whose previous education has been generous and severe have very great advantages in the competition of the Academy. It is no more than just to the young men themselves than it is to the country that the cadets should not only enter the competitions of academic life with the best possible preparation for their subsequent studies, but that they should prosecute these competitions upon as nearly equal terms as is possible. The truth can be too often nor too earnestly repeated that the Academy exists for the service of the country, and that its sole design is to find and train for the country those who will prove to be the most accomplished and capable officers. It would seem to be a self-evident truth that the country has a right to the services of the most promising of its youth who are willing to employ their energies and their lives in its defense against domestic disorder or foreign invasion. That method of selecting the officers of its army can only be the best which enables the country to avail itself of the best of its citizens who are animated by this spirit. Experience has proved that a fair examination, open to all who are willing to submit themselves to its tests and the subsequent restraints and discipline of military life, is the best method of making the selection. We do not inquire how such an examination should be conducted, nor who should be admitted to its competition. We contend that all those who comply with the conditions prescribed should be allowed to compete for the service and honor, and that the selection should be made on grounds which shall be impartially applied. It is obvious that every provision that is practicable should be made to render these examinations wise and impartial. The limits of age, the terms prescribed, the methods of testing capacity and promise, and of guarding against misjudgment or favoritism, are particulars in respect to which experience might be expected to reveal increasing wisdom and to modify old traditions or usages, but the principle remains unshaken, that the country has a right to select the best of its youths who are willing to give themselves to its service, and until the country can execute its right the country itself and its choicest citizens must both suffer.

Another additional reason for applying these principles to a radical change in the method of selecting recruits for the higher military service of the country is found in the consideration that such a change would render it easy to raise the terms of admission, and thereby to enlarge and elevate the curriculum of study. Under the operation of the present system the time and energies of an able corps of instructors are necessarily employed for nearly a year in giving instructions in those branches of elementary knowledge which are taught in the public schools of the country, and the early part of the curriculum suffers by comparison with that of most of the institutions for the liberal culture of young men of the same age with the cadets. The fact that in some respects this institution stands higher than any other does not relieve it from this infelicity. For many reasons it may be conceded that its pupils should not be admitted at an advanced age, it is only reasonable to insist that its first class should have mastered as much elementary knowledge as is gained by the average of the graduates of our highest public schools.

The method of appointment which at present prevails, briefly stated, is as follows: Places for ten cadets are filled by the President of the

United States from the country at large. The remaining places are assigned one to each Congressional district and Territory and the District of Columbia. These assignments are made by the Secretary of War, at the request of the Representative from each district, to a *bona fide* resident. An alternate may be selected at the same time, who may be examined for admission at the same time with the primary, and take his place if he fails and the alternate succeeds. Most of these appointments are made at the discretion of the Representative, with no opportunity for any competition between those who might be desirous of the place. In a few but increasing number of cases the Representative makes his recommendation after an examination which is open to all competitors within the law. This examination, from the nature of the case, is limited to the intellectual qualifications of the applicants.

The defects and evils which attend the working of this nomination and appointment of cadets, without opportunity for competition and without examination, are suggested and confirmed by the following instructive facts. By a reference to Appendix F of the present report, and also to E of the report for 1877, it will be seen that the proportion of the cadets who are appointed to the number actually admitted is unreasonably large. This points to a radical defect in the prevailing methods of selection and appointment. It will be seen, moreover, that the number of those rejected by the medical examiners is very much smaller than of those set aside for intellectual deficiencies. It will also be seen by an inspection of Appendix D, report for 1877, and Appendix E, report for 1879, that the proportion of those rejected in many if not in all of the States for intellectual deficiencies in no way corresponds with the relative facilities for popular education which are generally supposed to exist in these States. An inspection of the same forces us also to conclude that no uniform method is adopted in the districts generally, or in any groups of the same, whether limited by States or sections of the country. The consequences of these numerous failures are evil and only evil. The Representative who designates a candidate who fails to be admitted at the entrance examination, or who is turned back before the first year is finished, deprives his district of a representation at the Academy during a part and perhaps the whole of an academic year, and perhaps longer. It is conceivable, even, and it is sometimes true in fact, that several districts in the same State should fail to be represented for a series of years in consequence of the failure of the nominating agent to select a candidate on correct principles and by appropriate tests. To what extent this has actually occurred may be inferred by a comparison of Table C, appendix to report for 1877, with a summary of the number of cadets from the several States actually enrolled in the official registers of the Academy for the corresponding years. A careful study of the graded rolls of the cadets for the last ten years will, we believe, justify the conclusion that a very large proportion of those who attain special eminence have had special advantages for study and intellectual discipline before they entered the Academy. A few, by dint of energy and perseverance, associated with extraordinary natural gifts, have been able to overcome their early disadvantages. A very large number, however, of those who have been discharged after entering would never have suffered the disgrace or misfortune of failure had they been tested by a competitive examination before their district was supplied. The Representative who nominated them would have been spared the mortification of having made an unfortunate appointment. The officers of the Academy would have been spared the odium which, though often unjust, is none the less real, and which is visited



without stint upon an institution which maintains a severe, though necessary, discipline. The district itself would have been spared the double mortification of having been for a time represented unworthily and subsequently for a time not represented at all, during the interval which must necessarily elapse before a vacant place can be filled by a cadet in actual attendance. In view of these facts and considerations, it would seem that those who in fact determine these appointments would gladly avail themselves of a better method. Such a method has been tried by a sufficient number of Representatives and for a sufficient time to justify its immediate and universal adoption. It has been tried in States and sections of the country which are very remote from one another, in those in which the public schools are the most and the least efficient. It is simple, easily understood, and manifestly just and impartial. It commends itself with especial force to the Representatives themselves as relieving them from manifold solicitations, all which they cannot possibly gratify, if they attempt to decide upon the superior claims of several applicants for a personal or political favor, the granting of which can only prove a serious calamity provided his appointee should fail at the entrance examination, or on his subsequent career. The Representative has only to give the nomination to the successful contestant at a fair examination, which shall be open to all applicants within the district of a suitable age and approved character. The examiners should be selected by himself or by any gentleman whom he may nominate. The proceedings should be public, and also the results in each study for each candidate. The experiment has been tried in the same district and in some instances by the same Representative to fill a succession of vacancies. So far as we are informed the results have been uniformly satisfactory. In many, not to say in most cases thus far, the cadets nominated by this method have been admitted to the Academy without difficulty and graduated with honor.

It should be distinctly observed that were the method of appointing cadets corrected and perfected as proposed, the Academy would still fail to supply the vacancies that occur in the Army as at present constituted. This at once suggests the question which is regarded by many as of independent interest and prime importance, viz, Is it desirable that the Academy should train all or nearly all the officers of the Regular Army when on its peace establishment? This subject has attracted the attention of the board, and they submit the following as the result of their inquiries and deliberations:

The document appended and marked G shows that for the nine years previous to the late war the average annual casualties in the grade of commissioned officers was  $47\frac{1}{2}$ . The average of graduates at the Academy for the same years was  $42\frac{1}{2}$ ; the supply being nearly equal to the demand. For the past seven years, on the other hand, the number of casualties has averaged  $81\frac{1}{2}$ , and the number of graduates has been  $49\frac{1}{2}$ . The deficiency of nearly three-eighths of the annual appointments has been supplied chiefly from civil life.

Appendix H gives the number of the commissioned officers enrolled in the Army Register of 1878 who have been appointed from the Military Academy, from the ranks, and from civil life.

The objections to this practice in the judgment of the board are very serious. It tends to the introduction of a class of officers who, whatever may be their excellences, must have a defective knowledge of their profession as a science, and must inevitably result in the formation of cliques, with their attendant jealousies and ill-feeling. It cannot be

denied that when the Academy was founded, and especially when it was placed substantially upon its present footing, it was both intended and expected that it should be a training school for all the officers who should be required on a peace establishment. It was also anticipated that by being a school of instruction for all these officers it would indirectly become a school of instruction for the officers for the largest army which would be required in a time of war. These anticipations have or have not been fulfilled. If they have not, there is something radically defective in the organization or the administration of the Academy itself. If they have, there is no occasion to abandon the original theory as to the method of recruiting the casualties that regularly occur. Every great war must, of course, add valuable officers of every grade to the permanent force of the Army who will have been admirably educated in the school of actual service, whose qualifications no one would question, and whose well-earned honors the country is forward to acknowledge. But the periods for the existence of training schools of this description have, happily for the country, been infrequent and brief, and no one can desire that they should be otherwise. There can be no reason, then, why upon a peace establishment the country should not return to its original theory and continue to supply its skeleton army with officers who are trained at its own Military Academy. The elevation of subordinate officers to higher positions without the preliminary scientific mastery of the studies which are deemed essential to success by all military men cannot be possible or desirable except within very narrow limits. The introduction of any considerable number of young men from civil life into the corps of officers without any special military education and with no previous training to hardship, exposure, and agility in the school of the soldier, and no scientific culture in the school of the officer, must lower the tone of the profession and be fraught with other evils. It will inevitably tend to divide those who should be animated by one spirit into two rival bodies which will be alienated in their feelings as they become competitors for the honors that should be reserved for exceptional services. These jealousies will be likely to be most active at those critical moments which are most important in the history of the nation.

It is obvious, that if appointments are made in large numbers from men in civil life, there is reason to fear that they will be made for special political services, or at least on the ground of party services or party allegiance. Should this be the case, it would inevitably follow that political feeling would become more active and more distinctly recognized among the officers, and that promotion and appointments would be solicited and given on the ground of political sympathies. Nothing could be more disastrous to the *esprit de corps* which has characterized our Army hitherto, than the introduction of such divisive influences by which the officers would be arrayed against one another in two opposing factions that would grow and gather strength by the abundant material on which they would feed from within, and by active stimulants from without. It has hitherto been a point of honor and of etiquette with the most of our officers to abstain from the active expression of political feelings or preferences. They have been sometimes severely criticised because they have seemed to be so indifferent to the movements of the great wars of political feeling which periodically agitate the nation's life. Perhaps it will be discovered that that is not one of the least salutary of the traditions of West Point which has trained them to the principle of abstinence and reserve. The evil, if it be one, will rather



perated than cured by the introduction into the Army of a considerable number of young men with traditions and sympathies that are antagonistic to those of an institution which must be strong in its traditions and prejudices even, if it is to be sturdy in its honor and courage, its patriotism, and its self-sacrifice.

The small and insufficient number of trained officers that is at present maintained by the Academy will be still further diminished by the recent reduction from *forty to ten* of the number of cadets who may be appointed *at large* by the President. The original design of the provision for the appointments *at large* could not have been fully understood by Congress which ordered that the number should be diminished. It was intended to provide especially for the sons of persons in the military or naval service of the country, and whose tastes and aspirations would naturally lead them to follow the profession of their fathers, and also for some of many others whose occupations in life, especially their official duties, prevent them from acquiring a legal or permanent residence in any Congressional district. Such nominations should of necessity be open to free competition, and the classes of persons who are to compete should be distinctly specified. Whether or not this provision shall be responded to, the board cannot doubt that whenever a permanent organization of the Army shall have been decided by Congress, provision will be made for the increase of the corps of cadets to a number as shall be found necessary to supply the casualties that may be expected among the officers. The value of this institution has been too often and too strikingly demonstrated to the country to permit its defects to remain uncorrected or its influence to be limited. In presenting this report of the duties which they have performed, and the conclusions which they have adopted, the members of the board have to add that they have been entirely agreed in their warm appreciation of the importance of the Military Academy to our national peace and honor, and also of the excellence of its system of education and training, and of the desirableness that its efficiency should be increased by a practicable method, and its culture be extended to all the officers of the Army which the country should decide ought permanently to be maintained.

In this way, and in this way only, can the country be assured that in the emergency which threatens it from without, or within, it will have at its command the organic force which can promptly and energetically animate and direct whatever numbers of patriotic men the nation shall summon to its service.

This report of which is respectfully submitted for the Board of Visitors.

December, 1879.

NOAH PORTER, *President.*

DORMAN B. EATON, *Vice-President.*

HENRY L. ABBOT, *Secretary.*

HON. SECRETARY OF WAR.



REPORT OF THE BOARD OF COMMISSIONERS OF THE  
SOLDIERS' HOME.

OFFICE OF THE BOARD OF COMMISSIONERS OF THE  
SOLDIERS' HOME, ROOM — WINDER BUILDING,  
Washington, D. C., October 21, 1879.

SIR: I have the honor to submit the annual report of the Board of Commissioners of the Soldiers' Home for the year ending September 30, 1879, as required by the Regulations for the Home, Article I of which directs that the Board "at their meeting in October will make an annual report of their proceedings to the Secretary of War for the information of Congress."

At the monthly meetings of the Board all the members have been present, and the accounts of the treasurer for the preceding month have been audited at each meeting.

The condition of the buildings and grounds has been such as to require but few important changes during the year and no extraordinary repairs.

During the first part of the year covered by this report a permanent surface drain was laid from a point near the northwest gate, along the west line, to a point connecting with the natural drainage to the lake, near the principal entrance to the grounds. This work was necessary for the protection of the stone foundation of the fence on the west line, which would have soon been undermined by the flow of surface water from the western slope gathering at the base and confined inside the line instead of spreading as it formerly did through the old fence.

Early in the spring of this year a new drive was constructed in the extreme southern portion of the grounds upon a survey made last year to complete the circuit by the south avenue and avoid a portion of the drive passing an unsightly corner containing an old gravel pit and the *débris* gathered from fallen timber, &c.

The Home cemetery was enlarged this season by extending a stone wall on the east side and connecting with it a substantial fence enclosing all the ground to the extreme north point of the Home property. Within this new addition, and bordering immediately upon the old cemetery, was a large excavation made to procure gravel for walks and drives. This has been filled and graded and for the most part plotted uniformly with the old cemetery. A great portion of the ground is covered with a fine growth of native hard-wood trees, and it can be made with comparatively trifling expense an exceedingly beautiful and fitting place for the purpose it is intended.

In the month of June last a three-inch water-supply pipe was laid from the steam-pumps to the "Home farm" buildings, providing for sufficient water on the farm for all purposes.

All needed repairs to fences and buildings have been made. They have been chiefly of exterior painting, &c., required for their preservation.

In the government of the inmates, and in the measures taken for their happiness and welfare in every respect, no changes of system or regulation have been made. All matters in this respect within the control of the Commissioners and the officers of the Home have been satisfactory.

The officers of the Home have been attentive and efficient in the discharge of their duties. No changes have occurred in the roster.

Record of inmates shows the following changes:

receiving the benefits September 30, 1878.....	567
admitted during the year:	
Regular .....	120
Temporary .....	39
Readmitted .....	75
	— 801
Died by withdrawal, absence without leave, &c.:	
Regular .....	168
Temporary .....	29
Dismissed .....	4
Died .....	31
	— 232
receiving the benefits September 30, 1879.....	569

I have the honor to be, sir, very respectfully, your obedient servant,  
J. K. BARNES,  
*Surgeon-General, U. S. A., President Board of Commissioners.*  
Hon. SECRETARY OF WAR.

## REPORT ON THE STATE, WAR, AND NAVY DEPARTMENT BUILDING.

OFFICE OF BUILDING FOR STATE, WAR,  
AND NAVY DEPARTMENTS, OLD BUILDING,  
NAVY DEPARTMENT, SEVENTEENTH STREET,  
Washington, D. C., July 1, 1879.

I have the honor to submit the following report of operations relating to the construction of the building for State, War, and Navy Departments in my charge for the fiscal year ending June 30, 1879:

### EAST WING, OR NEW NAVY DEPARTMENT.

As shown by my report for the last fiscal year, operations looking to the completion of the east wing of the building at the earliest possible date were being pushed at the close of that year with all the energy that was demanded. The force of 525 men employed at that time was recently somewhat increased, and the working force was at all times maintained as could be conveniently handled. Tables showing the number of men employed and the contracts in force during the year are appended further on.

The following is a history of the progress of the work during the year, the operations being classed under a few general heads:

#### CAST-IRON WORK.

The cast-iron door and window frames and trimmings were essentially completed and in place about the middle of the autumn, although the very last of the work was not completed until December 24. This work constituted a very important item in the construction of the building, and in its nature, prolonged and tedious. The total weight of cast-iron of this class alone amounted to 545½ tons. All the washboards

and stairstrings are of cast iron, about one-fourth inch in thickness, and are secured to the brick walls with expansion bolts. This work was commenced on the 1st of July, 1878, continued as rapidly as the contractor could turn it out, and was completed on March 1, 1879.

The cast-iron ornaments for the three pediments of the pavilion roofs on the east front were secured in their places between July 18 and August 9. They were then at once thoroughly painted and sanded.

The iron work for the dome of the main stairways was much delayed in the contractor's hands, the first delivery not being made until August 27. This consisted of a portion of the wrought-iron framework and girders for carrying the cast-iron work, which constitutes the entire dome, including all its ornamentation, even to the light sash containing the glass of the skylight. The girders with their upper connections sustain also a narrow marginal flooring in the attic around the skylight, capable of carrying a heavy load of any articles likely to be stored there to the extent of 200 pounds per square foot. The framework was in place and the attachment of the cast-iron shell of the dome was commenced on October 1. The whole was completed and ready for painting on December 4. The architectural and ornamental features, as well as the construction of this dome, were designed in this office.

#### HEATING AND VENTILATION.

As shown by my last annual report, the heating apparatus was mainly in place at the close of the last fiscal year, and most of the ventilating flues were ready for the registers.

On the 15th of August the heating apparatus, being on the hot-water system, was filled with water for the first time. Fires were lighted in the furnaces on the 22d of the same month, to test the condition of the immense number of joints in the apparatus and the circulation of the water, with an entirely satisfactory result in both particulars. But few joints or valves required any tightening or repacking, and this being immediately done, the apparatus was ready for use. The suspended system of main flow pipes was covered in the month of December with a non-conducting coat of asbestos board, hair felt, heavy paper, and canvas, applied over each other in the order mentioned.

#### MAIN STAIRWAYS.

The last stone of the main stairs—so nearly completed at the close of the last fiscal year—was set on the 18th of July. It was necessary to await the completion of the plastering and other rough work before the hand-railing and balusters could be safely erected upon the stairs and landings. The railings of mahogany had been commenced the previous June, and were ready to go in place about the first of December, at which time it had been expected to have on hand a sufficient number of balusters (bronze) to commence setting them up. A contract was made for the balusters, including the bronze hardware for the building in general, on the 19th of the previous September; but none of the balusters were received at the building until March 26, and then only a very small number. The erection of the railing was at last begun on the 2d of April, and has been continued to the present time as fast as the balusters were delivered. At this date there are still lacking one baluster for the first story, and the two newel posts for the basement story. The railing has been finished and polished, however, down to these points. The contractors for the bronze work seemed to labor under un-



ted difficulties, while the nature of the work rendered it inexpedient the United States to cancel the contract and procure the work elsewhere. The balusters and newel posts were designed in this office.

#### PLASTERING AND STUCCO WORK.

the plastering and stucco work was well under way at the close of the last fiscal year, and was continued vigorously in all its branches at that time until it was essentially finished, about February 1. Commencement was made in the fourth and attic stories, and the work continued downward through the building in the usual manner. Plastering of the basement was begun on September 28, and in the main stairway on October 22.

and the corncicing and other stucco work was completed on January 1, excepting that at the elevator landings. All branches of this work were executed by the workmen at the building, all the plaster ornaments and molds being cast and finished there.

The profiles of cornices and moldings and the plaster ornaments were copied from the similar work in the south wing, in order to continue a uniform design and style of finish throughout the interior, and was done upon the exterior of the building. This will render the opening of the corridors through from wing to wing entirely practicable whenever it should be desirable.

#### WOODWORK AND FLOORING.

The woodwork in the building consists, besides the flooring of rooms and doors, window-sash, and water-closet finish. The latter is generally of black walnut and the two former generally of mahogany—the doors of the cellar and a part of the attic and the finish of the cellar water-closets of white pine.

The greater part of this work was got out by hand in the shops during the summer, and was put together and into place during the late fall and winter under the natural heat of the building. For this purpose the drying apparatus was kept running at a suitable temperature from the first of September until the building was completed and turned over to the departments.

The hanging of windows was begun in the fourth story on October 3, and the hanging of doors in the attic on November 30. Laying of the cement of the attic was begun on August 23, and finished September 16. The laying of the pine floors was begun in the fourth story on October 1. The parquet floor of the Secretary's room on the second floor was commenced by the contractor for that work on the 17th of March, and was the last thing finished in the building before it was turned over to the departments.

#### GLAZING.

For all windows and door transoms in the building the glass used was the best American double thick, and the best British polished plate ( $\frac{1}{4}$  inch thick), the former being used only in the windows of the sub-basement, and the latter throughout the remainder of the building. All the light glass exposed to the weather had been set in place during the previous fiscal year. On September 26 the glazing of window-sash was commenced in the fourth story, and was mainly completed throughout the building in season to close it against the winter weather. The ground and colored glass of the skylight over the main stairways

was set during the month of March, and was finished on the 28th of the same month.

#### TILING.

Excepting the cellar or sub-basement story, all the floors of corridors and water-closets throughout the building, and also the floors of the upper attic, were tiled. The material used consisted of marble from the quarries at Swanton, Vt., excepting the black tiles and borders in the corridors and stairway landings of the attic; the former consisting of black slate tiles—a surplus from the construction of the south wing—and a part of the latter being from Glens Falls, N. Y.

All the tiles are twelve inches square by 1 inch in thickness, and are laid alternately white and black, well bedded in hydraulic cement mortar. The work was commenced on September 17, in the north attic corridor, and progressed as rapidly as other operations would permit, until it was finished early in January, except the elevator landings, which were tiled later. The area of tile flooring is about 21,000 square feet, nearly half an acre.

#### PAINTING AND HARD WOOD FINISHING.

This branch of the work was carried on in its proper order and with unusual care, furnishing not only a most durable protection to the iron and wood work, but bringing out the ornamentation of the one and the natural beauty of the other in a pleasing degree. All the iron work received five coats of paint besides a thin wash of light color on some of the raised parts.

The materials used included about 3,400 pounds of red lead, 3,700 pounds of white lead, and 460 gallons of raw linseed oil; figures which furnish a basis for a rough estimate of the great extent of surface to be covered.

As all the iron-work was delivered at the building unpainted there was no difficulty in applying the priming coat of red-lead paint, as was done, in a thorough manner.

The heavier part of the painting and finishing was done during the early winter months, but it was not entirely completed until the middle of April. The dome of the stairways was painted and decorated by the regular force on the building in the early part of the winter. The painting and decoration of the Secretary's room and the four communicating rooms north and south of it was performed under contract between the 5th of February and the 3d of April.

#### PLUMBING.

My last annual report showed that all the principal pipes for the water and gas supply and for drainage had been put in during the previous fiscal year. The work remaining to be done consisted, therefore, of the plumbing proper, namely, the placing and connecting all the water-closets, urinals, wash-basins, slop-sinks, and bath-tubs, and supplying them with water, hot or cold, or both, as the case might be.

The Demorest water-closet was used throughout the building excepting the sub-basement, which was provided with plain hoppers and automatic spring-valves.

There are two apartments on each of the six floors of the building set apart for water-closet uses, each of which contains four closets,



three urinals, a wash-basin, and a slop-sink, excepting the two cellar rooms, which contain each four water-closets and two urinals only.

In addition to these apartments there are two completely fitted rooms with bath-tub, water-closet, &c., in communication with the Secretary's suite of rooms on the second floor. There were also provided a two-basin wash-stand in the room intended for the draughtsmen of the Bureau of Steam Engineering, and a three-basin wash-stand and bathroom adjacent to each of the rooms for the engineers in charge of the heating-apparatus and machinery in the cellar.

The work was commenced on the 18th of November and was finished on the 1st of March. All pipes and fittings used were of ample size; good ventilation was secured, and the entire work was planned and executed upon the most approved sanitary principles, and in the most substantial manner.

As the Potomac water service, from which the building draws its supply, flows with certainty no higher than the second floor, two sets of steam pumps and tanks were provided. The tanks have a capacity of about 4,100 gallons each, and may be easily filled in twenty minutes. For a further description of this apparatus reference is made to the copy of a letter to the honorable the Secretary of the Navy, further on.

#### GAS-FIXTURES, MANTELS, GRATES, ETC.

The hanging of the gas-fixtures was commenced on the 13th day of March, and was completed on the 15th day of April. There were hung 262 chandeliers and 89 brackets, of all kinds. As a rule the rooms were provided with 6-light chandeliers; but there were also a considerable number of 5-light chandeliers having center slides with argand burners, for use over the desks of principal officers and clerks. All principal corridor fixtures were 4-light chandeliers.

The setting of mantels was begun on the 9th of March and finished on the 10th of April. There were thirty-three mantels of marble and two of slate. Each mantel contains a fireplace, which is also a ventilating duct, provided with a handsome grate and a soapstone lining. The lining of fireplaces and setting the grates followed closely the erection of the mantels, and was completed April 14.

Each of the principal rooms, such as those to be occupied by heads of bureaus or their chief clerks, was provided with a set of picture rods securely attached to the brick walls or iron partitions about 4 inches below the stucco cornice. They consisted of large brass pipes, gilded, and containing closely-fitting round iron rods for stiffness, and were secured by brass bolts or screws having heads of appropriate shape, size, and finish. Twenty-eight rooms were fitted with these rods, which amounted in all to 1,359½ running feet.

#### ELEVATORS.

Two steam elevators, communicating with every floor in the building except the cock-loft—seven in all—were provided at points equidistant from the center of the building. The south elevator is a handsome passenger car, designed in this office, while the north elevator car is of a plainer though quite tasteful design, and is intended for use in elevating parcels of freight as well as passengers.

These machines as arranged and constructed are the best of steam elevators, being provided with every safeguard against serious accident, and requiring only that degree of reasonable care and intelligent hand-

ling that should be unremittingly practiced with every apparatus to which human life and limb are intrusted.

The preliminary work of getting the elevators into place was commenced on the 7th of November. Foundations for the engines in the cellar were commenced on February 18, and steam was admitted for the first time on the 26th of March. Everything, including the gallery fronts, annunciators, and gas-lights, was fully completed on the 11th of April.

#### LIBRARY.

This large room, situated on the fourth floor, in the center pavilion, remains unfinished, owing to the complicated and special nature of its design. Considerable time was necessarily consumed in the preparation of detail drawings and the models of ornamental work. All the architectural, ornamental, and constructive features were designed and arranged in this office, excepting the encaustic tiled floor, the original design of which was somewhat modified to suit that of the lowest competitive bidder.

The walls, ceilings, gallery-flooring, and book-cases will consist entirely of cast iron, with marble panels and a skylight of white ground glass.

The general arrangement of space embraces one large central room, two stories in height, surrounded at the second story by a gallery, and communicating through archways on the north and south sides, in each story, with alcoves containing the book-cases and the hand elevators which connect the stories.

In the month of February, the wrought-iron girders, framework, and trusses to carry alcove partitions were put in place. There are four heavy main girders, running east and west from wall to wall, for carrying the ceiling and the attic flooring. This flooring may be safely loaded with a weight of at least 150 pounds per square foot.

Proposals for the cast-iron work were invited on the 31st of December, but owing to the delay in the passage of the appropriation the contract was not entered into until March 5. The erection of the cast-iron work was commenced on the 11th of June, and is now progressing rapidly.

#### COURT-YARD, AREA WALLS, COAL-VAULTS, ETC.

Preparations for the following-described court-yard work were made at the close of the last fiscal year. The necessary excavations were begun on July 22, but suffered considerable delay from long-continued wet weather. The concrete foundation of the south-wing area wall was begun on September 11, the brickwork of the vaults of that wing on September 25, and the setting of stone on October 16, by which time similar parts of the walls and vaults of the east wing were well underway. All of the masonry and the earth covering of the vaults was completed by the last of November. The iron stairs and hoists were put up during the winter.

On June 23 the laying of an asphaltum pavement, with a base of hydraulic cement concrete, was commenced upon the surface of the north and south court-yards lying over and near to the coal-vaults and steam-boiler rooms previously built. Damage to the contractor's works by fire at that time has delayed the completion of the pavement until now, but it is expected to be finished in a few days. The thickness of the asphaltum is  $2\frac{1}{2}$  inches, and of the concrete base 6 inches.

The capacity of the coal-vaults of the south wing is 200 gross tons, and of each set of vaults for the east wing 150 gross tons.



much of all this work as fell immediately opposite the rear wall of south wing was paid for by the State Department from an appropriation available for the purpose; the cost being, for walls, coal-vaults, stairs, and hoist, \$8,960.50, and for the asphaltum pavement, \$7. The last item covered 243 square yards, equivalent to one-eighth of the surface of the entire south court-yard, and is, therefore, at the State Department should ever be called upon to pay for the paving of the court-yards of the building.

#### APPROACHES AND DRIVEWAYS.

Work comprised the sidewalk, steps, and parts of the stone buttresses of the main entrance, the fences on the east front, and the necessary excavations and foundations therefor. It was all well started in the close of the last fiscal year, but was delayed somewhat through the summer by the non-arrival of cut stone from the contractors.

The last of the granite and blue-stone flagging arrived on August 26, which all the masonry was finished as rapidly as possible. The step of the main entrance was set on November 8, and the sidewalk, during the taking up and resetting to true grade of that part belonging to the south wing, was finished on November 27.

A stout movable hand-railing, to consist of a single rail with three balusters, is in process of manufacture for each of the four low stone platforms projecting into the driveways from the basement corridor. The railing will be heavy brass pipe and fittings, and the railings will be placed in a few days.

The iron fence was put up between the 10th and 14th of December. Grading and sodding the included plats were done in the early part of October.

On the 6th of March the work of laying an asphaltum and hydraulic cement concrete pavement in the driveways from the curbstone of Executive Avenue to the court-yards was commenced, and finished on the 15th of the same month. About this time the six candelabra posts were placed along the front, and the lanterns put up early in April.

Between May 22 and June 9 the surface of West Executive avenue, leading from the north gateway nearly to the east entrance of the State Department, was coated with good gravel, 12 inches in thickness in the center line, and well rolled. At the same time the gutter next the curb was paved.

#### CLEANING DOWN STONEWORK.

This long and tedious operation, which included pointing of the joints, was begun on the 7th of October, was suspended during freezing weather, and finally completed on the 15th of April.

#### IN GENERAL.

It was noticed that the sheet-copper lining of the gutters on the coping of the court-yard walls, although laid with all the usual care with solder connections, frequently gave way in the joints and leaked. Accordingly, a copper lining was devised and substituted for the old one, which will doubtless overcome the difficulty. It consists of strips of copper made up of large sheets brazed together and connected to the roofing copper and to the edge of the coping by means of copper rivets. No sign of leakage has been discovered since the im-

provement was made some two months ago, nor in one trial-section which was laid in December.

A temporary covered bridge to communicate between the second story of the old building for the Navy Department and the first story of the new building was constructed in the latter part of March.

The labor needed in the several branches of direct construction or putting materials together in the building was generally employed by the United States, under skilled and careful foremen; by which means workmanship of uncommon accuracy, strength, perfection, and durability throughout was obtained. Accidents to workmen and materials have been, for the same reason, rare, and generally unimportant—a noteworthy fact when the many hazards attending their movements on so large a scale and the tendency of workmen to become careless from familiarity with danger are considered.

At the request of the Navy Department, the Bureau of Steam Engineering was permitted to have the use of the northeast attic store-room in the south curtain from about the 1st of November. They at once fitted up the room with shelving, and commenced on the 7th of November to remove thence their record-books. By the further request of that department, effort was made to finish the long room on the court-yard side of the third story south, as far as possible, in advance of other rooms, for the benefit of the same bureau. This bureau commenced to move in their furniture on the 13th of January, and took possession with their corps of draughtsmen on the 19th of March.

It was expected at the close of the last fiscal year that this wing of the building, exclusive of the library, would be made ready for occupancy by March 1, 1879; but owing to a reduction of the hours of labor during nearly six months of the time, to conform with the similar action of the Navy Department at its yards, one month's extra time was consumed upon the work. Although essentially ready on the 1st of April, the date of full completion, excepting the library and handrailing of the main stairs, was unavoidably further delayed until the 15th of April, by the tardiness of the contractors for furnishing gas-fixtures and mantels throughout the building, and the marquetry-flooring in the Secretary's room. On the latter day, however, the work of thoroughly and neatly clearing up and locking the corridor-doors of the building was finally completed to await the time for delivering the building into the charge of the War and Navy Departments, which were to occupy it together pending the construction of the north wing. In the afternoon of April 16, 1879, the building was formally turned over to the Secretaries of War and Navy, and the keys deposited in their possession.

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#### PROBABLE OPERATIONS FOR THE FISCAL YEAR 1879-'80.

As shown by the foregoing report, the library and main stair-railing are the only pieces of unfinished work pertaining to the construction of the east wing. The stair-railing will be entirely finished as soon as the parts wanted are received, probably in two or three weeks. Nearly all the material required for the completion of the library has been contracted for and is in active preparation. It is expected to finish the work early in the coming fall.

No further appropriations are required for this wing of the building.



## NORTH WING, OR PART OF THE NEW WAR DEPARTMENT.

appropriation was made by Congress, and approved March 3 last, the construction of the north wing, previous appropriations having been mainly available only for the preparation of granite for the exterior

At this date there is on the ground ready for use all the cut granite, including five pieces, required for the sub-basement story and area walls, front and court yard, nearly all the cut granite for the front walls of the basement story, and all but two pieces for the first story front. The cut granite for the second story has already been received, the cutting and delivery of all that remains to complete the front of the basement and the court-yard wall to the top of the second story are going on rapidly. Cut granite for the backing, piers, and foot-courses for the walls of the sub-basement or cellar is also being rapidly ordered, and will be delivered in season for use.

The first important steps to be taken towards the direct construction of the new wing consisted in clearing the site. This necessitated the removal of the old building for the War Department, which stood entirely within the limits of the site—its corridor axis being only about 1 foot 9 inches wider and nearly parallel to that of the new building.

After the completion of the east wing to the extent described in the preceding report upon it, a partial suspension of operations upon the new wing necessarily occurred until the old building for the War Department could be vacated by the removal of its occupants, according to a rearranged plan, to temporary accommodations in the north half of the old building, and to the third and a part of the first floors in the old building of the Navy Department. This removal commenced immediately on the 16th of April.

Prior to this date, however (April 7), the demolition of the portico, consisting of six plain round columns with Ionic capitals, entablature, and two antæ of sandstone, from the north front of the old building for the War Department, was commenced and continued until nearly all the columns were carefully separated and safely landed on the ground. This was done in conformity with an order from the War Department to turn the stones of this portico over to the Quartermaster-General of the Army, to be transferred to the Arlington National Cemetery, where the old columns could be preserved and utilized appropriately at its portals. The stones were boxed and removed by the Quartermaster-General as soon as they were ready.

On the 9th of April the work of extending the sewer in the center of Executive avenue northward to the north wing was commenced. The sewer was completed as far as the east wall of that wing on the 16th of May.

On the 21st of April work was commenced on the ground between the buildings of the War and Navy Departments to remove an old temporary cement and plaster shed, fell the trees, and cut down the earth four feet to the level of the new court-yard. This earth-cutting extended around the west end of the old building for the War Department and to the lower sidewalk of Seventeenth street, and was completed on the 16th of May.

It was expected that the old building for the War Department would have been vacated before this time; but it was not finally turned over to the office until the 22d of May. On that day the letter of the department, giving the requisite authority, was received, and work was actively commenced upon the roof to tear the old building down.



As large a force as could safely and advantageously work together was employed until the last brick or other vestige of the old building was removed on the 16th of June.

But comparatively little of the old material thus gained could be of service in the construction of the new building. Only a portion of the bricks would be fit to lay in the permanent walls, owing to their variable sizes and degrees of hardness, and the cost of culling and cleaning. Some of the old timber, piping, slates, and window-sashes were preserved for temporary use in the new work. The material was, therefore, piled in separate lots on the ground south of the building, while that suitable for filling only was utilized in grading of the grounds south of the Executive Mansion.

The regular excavation for the foundation of the north wing was commenced on the 17th of June, and is nearly half finished at this date.

A large supply of materials for the concrete foundation is being collected, and the necessary machinery for mixing the concrete and for working the derricks is nearly ready for use. The derricks themselves are ready for raising, and all other appliances and materials required for the work are ready or being procured in good season.

During the fall of 1878 a complete study was made of the system of heating and ventilating this wing, and the results incorporated in the plans, so that every necessary preparation and precaution for the accommodation of the boilers and the numerous pipes, flues, and air-ducts required may be observed in the beginning and continued upward with the work. The system of heating will be the hot-water one now in successful use in the south and east wings.

\* \* \* \* \*

#### PROBABLE OPERATIONS FOR THE FISCAL YEAR 1879-'80.

Having on hand the large supply of cut stone, above mentioned, for the lower stories, and other preparations having been made on a large scale, it is expected to have the masonry completed to the water-table or first-story floor by the close of the present working season. It is also expected that the balance of the cut stone required to carry all the walls to the top of the first story will be delivered this season. Between the opening of the next working season and the close of the fiscal year it is expected that the masonry of the first story will be completed.

All the masonry drawings and other office preparations for the further continuance of the work will be made as usual, so that the next appropriation will find everything in readiness for its immediate application to direct construction of the building.

#### ESTIMATE OF COST.

The estimated total cost of the north wing, given in detail in my last annual report, amounted to \$2,192,414.40, based upon the then existing prices. It is probable that some items would now be found too low, and others too high; but that the sum total will not be materially exceeded if appropriations are made regularly, so as not to impede operations, or the preliminary business necessary thereto.

#### STATEMENT OF FUNDS.

Total amount expended to date on north wing .....	\$560,713 92
Balance on hand at this date.....	457,900 11
New appropriation desired for the fiscal year ending June 30, 1881.....	600,000 00

The amount asked for will be needed for the preparation of cut stone and for iron-work for partitions and door and window frames, and trimmings, in addition to the labor of construction.

conclusion, I have to state that the office for the construction of building was removed on the 29th of May, 1879, from the building southwest corner of Seventeenth and F streets to rooms on the north half of the first floor of the old building for the Navy Depart-

THOS. LINCOLN CASEY,  
*Lieutenant-Colonel, Corps of Engineers.*

GEO. W. MCCRARY,  
*Secretary of War.*

## IMPROVEMENT OF THE SOUTH PASS OF THE MISSISSIPPI RIVER.

ARMY BUILDING,  
*New York City, September 23, 1879.*

I have the honor to forward this day by express my manuscript Annual (or twelfth) Report on the Improvement of South Pass of Mississippi River, with the following charts to accompany:

1. Upper end of jetties.
2. Lower end of jetties.
3. Gulf of Mexico to 100 feet depth; seaward of the end of jetties.
4. Gulf of Mexico to 300 feet depth; seaward of the end of jetties.
5. South Pass from South Pass Light-house to Bayou Grande.
6. South Pass from Bayou Grande to head of Pass.
7. Works at head of Pass.
8. Plan of jetties, curves, &c.
9. Sections of jetties, &c.

Chart 9 was among the charts accompanying the eleventh report; but as charts were included with that publication, it is again forwarded, with the particular request that this chart, together with all that are sent herewith, may be published with the twelfth report, as they are of much interest and importance, and very necessary to a clear understanding of the subject.

Very respectfully, your obedient servant,

M. R. BROWN,  
*Captain of Engineers, U. S. A.*

G. W. MCCRARY,  
*Secretary of War, Washington, D. C.*  
(Through Brig. Gen. H. G. Wright, Chief of Engineers.)

NEW YORK, September 23, 1879.

G. W. MCCRARY,  
*Secretary of War, Washington, D. C.*  
(Through Brig. Gen. H. G. Wright, Chief of Engineers.)

I have the honor to present herein a report of the progress made in the improvement of the South Pass of the Mississippi River under the provisions of Mr. James B. Eads, by virtue of a contract made with him by the United States in the acts of Congress approved March 3, 1875, and amended by the acts of June 19, 1878, and March 3, 1879. This report is annual for the year ending June 30, 1879, and is besides the twelfth in order of inspector's reports.

Inasmuch as I have heretofore presented a report, the eleventh, bringing all data up to about April 1, 1879, it will be convenient to the reader, and subservient to clearness, to quote from that report such portions as may naturally be used in describing parts of the work of the year, without entailing much prolixity, and to condense certain other portions of the eleventh report, following in a measure the order there indicated for work done from July 1, 1878, to April 1, 1879.

The channel from South Pass Light-house to deep water in the Gulf of Mexico is shown in Nos. 1 and 2 of the accompanying charts, as it appeared according to surveys made from June 11 to June 14, inclusive.

At the head of South Pass the soundings were made July 10, in Southwest Pass July 17, and in Northeast Pass July 22.

*Progress in construction from July 1 to August 6, 1878.*

From July 1 to August 6 the work of construction accomplished was as follows:

ON THE EAST JETTY.

From 176 to 576 feet from East Point Station, a length of 406 feet, the stone forming the coping of the jetty was closely and smoothly packed, the mass having a crowning cross-section, with a width at base of about 14 feet. The middle line is about 2 feet above average flood-tide.

From 2,520 to 3,225 feet from East Point, 705 feet, a layer of loose willows about 23 feet wide, and generally from 2 to 4 feet thick, was placed quite level, and mostly rather over 2 feet above average flood-tide. Over that portion of this layer, between 2,945 and 3,130 feet from East Point, stone was piled 1 foot in depth, with a width of 15 feet. The stone, as in all cases, compressed the loose willows, as well as those in the upper mattresses, until the stone itself had an elevation above average flood-tide of from 2 to 2½ feet only.

ON THE WEST JETTY.

From 6,700 to 6,900 feet from pile No. 1 (at the junction of the west jetty with the offset called Kipp's Dam), 300 to 400 cubic yards of stone have been roughly piled.

Wing-dam C, projecting from the west jetty, has six mattresses added in the third, fourth, fifth, and sixth tiers next the jetty; 15 cords of loose willows were also superposed on the sixth tier, and about 225 cubic yards of stone were used in the repairs, the upper mattress being ballasted with stone in about the usual proportions. It rises to about 2½ feet above average flood-tide, considerable having sunken through the mattress-frame.

Wing-dam C, projecting from the east jetty, has five mattresses added near the jetty, and above them stone was placed with a depth of about ½ foot. In this case, and in many other localities throughout the jetties, the stone has sunken down through the mattress-frames, very greatly compressing the confined willows, and pressing loose willows, wherever present, into the bodies of the mattresses.

By August 6, the yellow fever had become very deadly at Port Eads, and work was suddenly and almost completely suspended until cold weather should appear.

I lost my capable second assistant, Mr. Parmley, who died of the pestilence August 9. Only the acclimated were retained at Port Eads, and the United States party was so greatly reduced that only the indispensable work of caring for the sick and disposing of the dead could be attended to regularly. A union in one party of all at Port Eads qualified to aid in a survey enabled me to obtain charts of the shoalest portion of the bar occasionally. These surveys are all the data we have giving channel depths over the bar in the summer and much of the fall of 1878.

*Depths available for navigation, summer and fall of 1878.*

The surveys show the following-named navigable depths over the bar and beyond the end of the jetties: July 2, 22.5 feet; September 6, 22 feet; September 25, 23 feet; October 11, 24 feet; November 2, 23 feet; November 13, 23 feet; December 6, 23 feet; December 23, 23 feet. Over the bar at the head of South Pass the ascertained depths were as follows: September 4, 21 feet; September 16, 21.8 feet; October 7, 22 feet; November 1, 22 feet; November 14, 22 feet; and December 5, 22 feet.



## PRELIMINARY WORK, FALL OF 1878.

out forty men were at work during most of the summer and fall. Work performed was generally in the nature of repairs, the care of sick, and the stores of material accumulated, and the construction of the minor buildings. However, about 1,000 cubic yards of stone were placed on the jetties as ballast in four localities from September 16 to November 8.

## RESUMPTION OF IMPORTANT OPERATIONS.

Eads's assistants reached South Pass November 24, and preparations for the active resumption of work were at once made.

December, the main work performed was the construction of a pier with a projecting pier ending in a T-head, and of a storehouse on the north bank. These structures are described in the eleventh report. They were built to afford storage for the gravel, sand, cement, stone, &c., the stone broken in fine pieces and in larger masses, all to be used in constructing the large blocks of cement-stone, or artificial stone, which now form the superstructure of the lower ends of both jetties, above and below the level of average flood-tide and near to it, and also to serve as standing room for the laborers and machinery used in the construction of the structures.

In December, also, the preparation of the foundation for the cement blocks was commenced. The area to be covered by the blocks was first cleared of the large stones, and a layer of gravel was placed along the edges of the jetty. Small broken stones or else gravel-stones were then worked down into the interstices of the mattresses at first, and later, when the upper surface of the jetties needed elevating, large stones, with the diameter of a foot perhaps, were used in raising it preliminarily, and small broken stones were sometimes gravel were used in filling the pores of the mass of added stone. The recapitulation brings the record of work at Port Eads, and of the condition of the structures, up to the beginning of 1879.

## WORK ACCOMPLISHED IN CONSTRUCTIONS FROM JANUARY 1 TO JULY 1, 1879.

From January 1, most of the progress made in adding to the jetties at the mouth of the South Pass has been either in preparation for the manufacture and placing of the cement blocks, or in their actual construction in place. The exceptions are as follows: Embracing all work of construction not directly connected with either the making or repair of the cement superstructure, or its protection by cribs, aprons, &c. In January, 225 cubic yards of stone were piled on the west jetty at Stations 45, 97, and 100.

Gravel sidings for an elevated railroad track have been partly made, beginning from the two jetties near their ends; but the purpose they were intended to serve has been abandoned, and, therefore, no description of the work need be given.

On the east jetty, 878 cubic yards of stone of the usual size have been placed between Stations 113 and 116, distributed somewhat irregularly. At a few points on each jetty above the root of the concrete work, the proposed loose stone has been leveled and arranged more symmetrically than it lay previously.

On the west jetty, a few short gaps, between Stations 75 and 89, have been filled with stone and gravel, 105 cubic yards of the first and 63 of the latter having been used.

## CONSTRUCTION OF THE CEMENT BLOCKS OF THE SUPERSTRUCTURE.

Preliminary measures for the construction of the cement blocks were taken as soon as work was resumed in the fall.

The wharf, storehouse, &c., pertaining to the east jetty were ready for use before

the first of the new year, and the building of the blocks, mixed by hand, was commenced. The corresponding structures of the west jetty were ready for use, by hand mixers of mortar, about the last of January. February 1 an elevated railroad over the east jetty was commenced. This is in bays of two piles each, about 10 feet apart, supporting a track on girders about 9 feet above average flood-tide. At the end of the jetty the span is reduced to 5 feet. This railroad was extended to the end of the jetty about April 1, and at that date a similar railroad over the west jetty was well advanced towards completion. On each of the tracks a small home-made locomotive has been placed, constructed from various pieces of unused machinery on hand. These are used in transporting small dump-cars, containing the mortar after it has been thoroughly mixed. When the car is over the moulding-box which has been built on the surface of the jetty, the load of mortar is dumped about an axis into this box. The mortar is made sometimes with the following named proportions of ingredients: Sand, 3 parts; gravel, 3; stone, 8; cement, 2. Considerable difficulty has been experienced in obtaining gravel in sufficient amounts. When none is available, the following proportions are used: Sand, 7 parts; stone, 16; cement, 3; the stone is broken into small pieces equivalent in size, perhaps, to a block 2 inches on each edge. These ingredients are wheeled up an inclined plane and dumped into the hopper of the mixer, which is an iron box having the capacity to hold about 7 cubic yards, suspended above the platform by a horizontal axis passing through a diagonal diameter of the hopper. This axis is hollow, and water, held by a reservoir above the box, is admitted through the hollow journals into the box, as fast as it is needed to give proper consistency to the mortar as its elements are being incorporated by the revolution of the hopper, which is effected by steam-power through a boiler and engine on the platform below. The car being backed under the hopper as soon as the mixture is perfect, generally in about five minutes after the first revolution, the door of the box is opened, and the mortar falls into the trough of the dump-car.

The blocks at the beginning measured 16 feet along the axis of the jetty, 8 feet in width and 3 feet in height. As the blocks settle somewhat at first, the earlier ones have been built up, until on the east jetty they have an average elevation above average flood-tide of 2.75 feet, and on the west jetty they are 2.25 feet above the same plane.

On the east jetty, July 1, 1879, the blocks began at Station 93.96, or 9,396 feet below East Point, and extended to Station 116.33, 11,633 feet below—a length of 2,237 feet, comprising 125 blocks.

On the west jetty, at the same date, the blocks were in place from Station 88.97 to Station 116.59, or 2,752 feet by actual measurement. This length was made up by 154 blocks.

Only the sides and tops of the boxes are taken off after the blocks have become sufficiently hardened, which requires about a week; most of the blocks then resist quite heavy blows with a hammer, without damage. The action of the waves on the sea-sides at first roughened the blocks, but since then the sides have been protected by an apron of stone piled against them and inclining downward to the water in a plane surface. The solidity of the blocks is increased by tamping the mortar as it is dumped into the mould, and a few large stones are inserted into the mass. The top of the block is, in the end, overlaid with fine mortar, composed of equal parts of mortar and sand.

The dimensions of the blocks of cement-stone in place July 1 are as follows:

East jetty.				West jetty.			
Station.		Width.	Thickness.	Station.		Width.	Thickness.
From—	To—			From—	To—		
93 + 96	98 + 16	4.5	3.5	88 + 97	01 + 27	4	3.5
	101 + 8	5	3.5		05 + 53	4.5	3.5
	101 + 97	6	3.2 + 7		101 + 16	5	3.5
	103 + 28	8	3.5 + 10		101 + 80	6	4 + 1 ft.
	104 + 58	8	4.3 + 13		106 + 80	8	3
	106 + 85	8	3		110 + 40	9	3
	110 + 87	9	3		111 + 86	10	3
	113 + 15	10	3		113	10	3.5 + 05
	115 + 31	11	3.5		114 + 12	10	3.5
	116 + 33	12	3.8				



the west jetty, seaward of Station 113.66, for about 275 feet in length, to the end of the work, the surface was raised from 3 feet below the plane of average flood-tide to 3 feet above, by loose willows, which afterwards covered by 17 blocks of cement stone; 132 cords of willows were used, being placed on a mass of stone, comprising about 950 yards, sunken just previously. The weight of the blocks caused the willows to settle until compressed to about one-half the original bulk, the upper surface being approximately coincident with the plane of average flood-tide.

On the same jetty, above Station 101.24, trestles were used in the construction of the elevated railroad, their uprights resting on two lines of wooden boards, placed along surfaces leveled previously. These trestles were simply braced, but amply for the strains to be borne temporarily. The foundations of the cement blocks were of macadamized stone gravel. This work was extended about to Station 90 by the construction of 59 blocks.

On the east jetty the cement work has been extended upstream from the beginning of the old blocks, at Station 100.92, 696 feet, by the construction of 34 new blocks, about 1,860 cubic yards of stone having been used in raising and leveling the foundation. The trestle-work previously employed on the west jetty was used for the support of the elevated railroad employed in the transportation of material. These blocks will probably be extended still farther upwards, but probably not as far as Station 75. The six old blocks first laid, beginning at Station 100.86, were raised 1 foot by the addition of fresh concrete, to partly compensate for their depression by settling.

Five cribs, built of palmetto logs, have been sunken, four on the river side of the west jetty, between Stations 115 and 118, and the fifth just beyond across the end of the west jetty. These are filled with stone, and serve as a protection breakwater to save the end of the jetty from the force of the waves, which sweep in here on the river side of the jetty with violence in severe east and southeast storms. These cribs are built all quite alike, but they are of the same general character. The logs are close together on the sides and floor, and only small stones can work through and escape from the mass. They will be described more fully in future report, after more have been placed in position. About 430 cords of stone were used in sinking and ballasting these five cribs.

Others of much the same character will probably be built and placed at the end of both jetties, both inside and outside the works.

The last block of the east jetty was gradually undermined and finally fell into two parts, its outer third falling over towards the end of the jetty.

#### EFFECTS OF THE GALE IN APRIL.

In the latter part of April there came a violent easterly storm, during which, on the 27th, the wind blew at the rate of 27 miles per hour. Before this, preparations had been made to improve the foundation of the blocks on the west jetty, by working under them a large quantity of stone. Preliminarily, the stone apron protecting the jetty on the river side had been removed, and the storm found this portion of the works unprepared to endure its violence. In consequence, by undermining, many cement blocks were more or less displaced or damaged. The two blocks ending at Station 109.55 tilted over towards the Pass and were broken each into two parts transversely to their length. The next four blocks in an upstream direction were also undermined, and were canted over through 20°, but remained intact. Three others

had holes battered into them, each about 7 feet long and 3 feet deep, throughout their thickness.

The damage to the jetties was soon thoroughly repaired, as follows: The two broken blocks at the end of the cement work were blasted and picked into small pieces and distributed as ballast. Their places were then supplied by two new blocks, after the foundation had been made secure. The four blocks which had merely been displaced angularly were forced into their normal beds by jacks suspended from above, and the foundations beneath them were remade substantially with macadamized stone and gravel. The three blocks which had been partially eaten away in holes were repaired with fresh concrete, the bond between the old work and the new being apparently good. About 1 foot of concrete was superposed on each of these three blocks to raise their level to that of the adjacent work.

Considerable stone was driven into the sea and lost from the jetty during the same storm. Some of it may be recovered, as much has been that has heretofore been temporarily lost from the jetties. The steep slopes are made very gentle in such cases, and the base of the jetties at and near the bottom is widened, rather than that anything is actually abstracted from the jetties.

#### SINKING OF THE JETTIES, ESPECIALLY OF THE CEMENT BLOCKS.

In the eleventh report, I remarked as follows:

The bench-marks which have been used in determining the level of the upper surface of the jetties have mostly disappeared; mattresses have sunken or have become covered with mud or rock, or have disappeared, until it is impracticable to ascertain to what extent the jetties sunk from July 1, 1878, to January 1, 1879. As soon as the fact could be ascertained, preparations were made for commencing a new set of comparisons.

Sufficient time has not elapsed to make results at present attainable of much value, but hereafter the blocks of cement-mortar will be frequently observed, and for my next report I hope to be able to give data, showing the amount of subsidence of the entire length of the jetties for the months from February to July, 1879. This will be practicable if the bench-marks remain in place.

Every effort has been made to obtain data which should enable me to ascertain the rate of depression throughout the entire jetties. At extreme low-tides heavy uprights were firmly attached to such mattress-strips in the top tier of mattresses as could be reached higher upstream than the origin of the cement-blocks. But these have broken off, or have canted over, or have sunken, until no reliance can be placed on their surfaces as bench-marks, and I have been reluctantly compelled to abandon for the present the endeavor to trace the vertical motion of the upper surface of the mattresses. They lie so far under mud and water and rock that the identification of bench-marks on them seems impracticable, and of course bench-marks on the overlying stone would be worthless. But since the earliest cement-blocks were laid down sets of levels have frequently been taken on them and connected with bench-marks on shore.

To illustrate the results, I remark that in April the mean result for 90 blocks on the east jetty was a depression of less than one-third of a tenth of a foot, and for 43 blocks on the west jetty just three times as much, the blocks on the west jetty being much the newer ones. Thus far and at present the blocks seem to be sinking at an average rate of from  $\frac{1}{2}$  foot to 1 foot yearly; but it is during severe storms that most of the depression occurs, and as this depression is somewhat proportional to the violence of the wave action, the sinking resulting cannot be uni-



even year by year, and until one year has elapsed, and the fall and g storms have been encountered, no intelligent generalization as to depression can be made.

Here in tables statements which exhibit the amounts of settling on various dates when lines of levels were run on the upper surface of the blocks.

As has been heretofore stated, we cannot ascertain how much of the sag of the upper surface of the jetties is due to normal condensation of the mass of the work, and how much to other causes, including ravages of worms near the ends, which must ultimately be succeeded by condensation as the wood in the lower tiers becomes so much eaten as to be incapable of supporting the weight of the superposed mass. The first settling is undoubtedly caused by solidification of the mass. The most marked effects of this are shown in the first week.

The condensation, together with the solidifying influence of the gravel, has been worked into the jetties and the presence of the solid wall of cement blocks, preventing the escape of the surface water, must have an appreciable effect in increasing the flow of the pass through the jet of the bar at the mouth of the pass. Another important effect is the prevention of the silting up of the channel from the presence of the jetties formerly driven over the east jetty during strong easterly winds on the sea side of the work by the violent storm waves raised. These forces, combined with the presence of an unusually favorable sea during which the river has been nearly at its low-water stage, and the coarse sand sediment in suspension, through the months of May, June, and July, which have hitherto been high-water months, have enabled Mr. Eads to obtain so successfully his channels with 25, 26, and 27 feet depth, successively, as designated in the several acts of Congress for improving the improvement.

During the storms of the late summer and fall of 1878, some of the sand behind the jetty was moved into a long spit, which had an elevation above average flood-tide of 1½ feet. This spit, which appears to have a prolongation west of the west jetty, is on sheet No. 2. The prevention of most of the leakage through the jetty, but only of the overflow, which must cease wherever the blocks are placed, has an important influence on the growth of land to the east and west of the jetties. Wing-dams or spurs of the jetties.—Most of these structures, 31 in number, are well dilapidated, but the spaces between them have so shoaled that the wing-dams have been greatly protected and preserved, and this shoaling has to a great extent controlled the channel, so that repairs to the wing-dams have been rarely needed. The last wing-dam on each side, A and a, however, have sunken below the level of average flood-tide, so that at extreme low-tide the piles of wing-dam A are visible. The mean depth of water at average flood-tide over the last wing-dam, A, was 8½ feet April 1. The depth over the opposite wing-dam a averaged 10 feet on the same date.

With the exception of the last two wing-dams on each side, there exists no necessity for constant and close observation of their condition, under present circumstances, and the statement of the condition of the wing-dams is given in this report.

#### DISCHARGE OBSERVATIONS.

Concentration of attention on other details has prevented frequent observations to determine the volume of discharge of the South Pass. But there is great need of absolute simultaneous observations of the volume of discharge of each of the three passes. As the passes are visited in succession, each one twice, in whatever order the several observations are made, I am convinced that they are of very little value, the discharge changes so rapidly and so considerably in a few minutes, with the rise of the tide, and with a change in direction or intensity of the wind. The appropriations for the examination and survey of South Pass have never been sufficient to allow the employment of a force of men and boats adequate to making of simultaneous velocity observations in each of the three passes, or for the increased frequency of the collection of sediment samples from South Pass. Now

that a more commensurate appropriation has been made by Congress, a second steam launch has been bought, and it is proposed in the fall to enlarge my party sufficiently to allow its division into three sections, each under a competent head.

The survey of the entire pass is needed once each year, and, if practicable, this work will be done. I give here the results of one set of observations for the discharge of South Pass at Falconer's, near the head of the pass, made February 22, 1879.

A discharge of 68,363.02 cubic feet per second was shown.

#### WORK OF THE DREDGE BAYLEY.

This dredgeboat reached Port Eads from New Orleans June 3, after very extensive repairs, which have greatly increased its efficiency. The discharge pipe is not now conveniently accessible for the purpose of gauging her performance, but the evident impression easily made in removing mud, &c., in a short time, while working to slightly widen and deepen the 26-foot channel in a few places, and to make the 30-foot channel in a few localities where it was lacking, shows a capacity for work greatly beyond her former performance.

At the same time it is evident that if there were a decided tendency to shoaling on the bar, caused by the deposition of coarse sand, which is the only sediment retarded and deposited here by the river in times of the flood stage, the work which could be accomplished by more than one such dredge as the Bayley would be insufficient to keep open a respectable channel, comparing the probable result with the present deep outlet.

#### USE OF A SCOURING DEVICE.

While the Bayley was undergoing repairs the 25-foot channel had been nearly obtained, and it became important to slightly widen and deepen the channel in one place to secure the important result. In this emergency a scow was fitted up with a set of long levers, of about 8 inch round stuff, which moved about a journal as a fulcrum, supported just abaft the stern of the scow. At the after end of these levers, far astern of the scow, there was attached an apron on a frame at an angle of about 60 degrees, with the levers so arranged that when the levers were rotated about the journal the apron's frame should touch the bottom, leaving an interval between the bottom of the pass, and the lower end of the apron, for the escape of the water, which, diverted by the apron, is forced down its inclined plane through this interval and over the bottom with great velocity, thus scouring away the mud and sand.

The device was successful, and the desired width and depth were soon obtained.

#### PURCHASE AND SALE OF BOATS.

During the year the new towboat Ella Andrews has been purchased and also thirteen-sixteenths of the old tugboat Brearly, while the Graf-ton and the Piassa, larger boats, have been sold.

#### THE CHANNEL THROUGH THE BAR AT THE MOUTH OF SOUTH PASS.

By the 1st of July, 1878, Mr. Eads had obtained a channel 22 feet deep and 200 feet wide. Since then, up to July 8, 1879, he has obtained other channels as follows: At the mouth of South Pass, March 27, 1879, a channel 24 feet deep and over 200 feet wide; April 7, 1879, a channel 25 feet deep and over 200 feet wide; June 18, 1879, one 26 feet deep and over 200 feet wide; and July 8, 1879, a channel 30 feet deep without regard to width.



10 there was a navigable channel at the head of South Pass 26  
 sep. On the 14th of June, the date of Chart No. 2, there was a  
 ble channel through the bar at the mouth of South Pass 28 feet

following table, giving the minimum depths at various dates of  
 channel from East Point downwards, in separate reaches of 2,000  
 each, will enable the mind to appreciate the progressive improve-  
 of the channel, a progress not always constant and uninterrupted,  
 ill generally persistent:

Date.	Distances in feet from East Point.					
	0 to 2,000.	2,000 to 4,000.	4,000 to 6,000.	6,000 to 8,000.	8,000 to 10,000.	10,000 to 12,000.
1875.....	22.5	18.7	16.7	16.2	9.7	9.2
1876.....	22.3	20.3	22.0	21.0	17.1	15.0
1876.....	23.5	19.6	21.0	23.5	23.0	19.8
1876.....	22.0	20.3	21.1	21.2	21.1	20.3
1877.....	24.1	21.1	23.2	22.0	21.2	20.5
1877.....						21.3
1877.....				22.1	21.4	20.5
1877.....						19.5
1877.....						17.8
1877.....	24.9	24.0			23.5	18.0
1877.....				23.8		
1877.....			26.0			
1877.....						20.3
1877.....						20.8
1877.....		24.4				20.7
1877.....						21.0
1877.....	26.3		28.5			
1877.....				24.2		
1877.....						21.3
1877.....					23.0	
1877.....						23.7
1878.....						23.0
1878.....						22.8
1878.....						23.2
1878.....						20.5
1878.....	26.0	25.9				
1878.....			35.5			
1878.....				25.4		
1878.....					24.3	
1878.....						23.0
1878.....						23.2
1878.....						22.3
1878.....						22.2
1878.....						22.0
1878.....						21.9
1878.....	28.4	26.4	35.7			
1878.....				27.1	25.3	
1878.....						23.0
1878.....						23.0
1879.....						23.9
1879.....						22.2
1879.....						24.8
1879.....	28.6	27.5	43.4			
1879.....				27.0	27.0	
1879.....						27.0
1879.....						27.0
1879.....	27.5					
1879.....			47.7	29.2	29.2	
1879.....						28.0
1879.....		28.4				
1879.....	30.5	30.7		31.0	30.7	30.5

#### WORK DURING THE YEAR AT THE HEAD OF PASSES.

*The submerged dam in Southwest Pass.*—A reference to the sixth report of the in-  
 April 5, 1877, on the South Pass improvement, Chart No. 5, shows that this  
 called at the time a mattress-sill, consisting merely of one tier of mattresses,  
 75 feet wide, but at its westerly end 35 feet wide only, and 2 feet thick through-  
 tended nearly across Southwest Pass, or from the extreme point of the west T-  
 within about 300 feet of the west shore-line. The work remained in this con-



dition, substantially, until December, 1878, when the task of building up this dam was commenced.

The project contemplated the continuance of the construction until 25 or 26 feet of water only should be available as a channel, instead of about 31 or 32 feet originally existing over the site of the mattress-sill. That project has been executed as follows: On the single tier of mattresses formerly laid down (elsewhere than from 360 to 625 feet from the west shore, where a second layer has been superposed on the first), second, third, and fourth tiers have been constructed.

The condition of the dam is now as follows: The first tier is 2,843 feet in length; on this is a layer of mud about  $1\frac{1}{2}$  feet thick. The second tier commences 365 feet from the west shore and contains 38 mattresses, extending to a point 1,855 feet from the west shore, or 1,490 feet from its beginning. The third tier commences 475 feet from the west shore, contains 34 mattresses, and ends at a point 1,310 feet from its initial point. A fourth tier, beginning 475 feet from the west shore, contains 9 mattresses in a length of 315 feet, and ends 790 feet from the west shore.

From the westerly end of the third and fourth tiers to the west shore the wall has been extended to the shore-line by adding loose willows, ballasted with stone, so as to present an elevation of 2.25 feet above average flood-tide. This was partly built in December, 1878, and finished in January, 1879. Loose willows, amounting to 740 cords, and 150 cubic yards of stone have been used in this extension. The new mattresses of this submerged dam are 63 feet in length and sometimes 33 and sometimes 38 feet in width, about half of each size. They are laid with the longitudinal axis parallel to the current in such a manner that each tier overlaps on the up-stream side, by about  $\frac{1}{2}$  its length, the one on which it rests. Most of them are thinner at each short edge than elsewhere, being about 1 foot thick on the down-stream edge and 3 feet thick at a distance of  $\frac{1}{2}$  the whole length, above whence they again diminish to a thickness of 1.3 or 2 feet at the up-stream short edge. Some of them are uniformly 2 feet thick for  $\frac{2}{3}$  of their length, diminishing to a thickness of 1 foot at one edge. It is assumed that the weight of the up-stream projection will cause the overlap to sag down, giving a slope on both edges in any case. Averaging, about 12 cubic yards of stone were used in ballasting each of the mattresses. In the construction 2,750 cords of willows and 1,040 cubic yards of stone have been used.

#### DAM NO. 5.

This dam, extending across the old east channel between the island and the east shore, has been improved by the addition of 743 cords of loose willows and 353 cubic yards of stone, which has left the surface about  $1\frac{1}{2}$  feet above average flood-tide, and the body of the dam is in good condition.

#### DAM NO. 3.

This extends from the west T-head to the shore near the light-house. A tier of loose willows ballasted with stone has been placed on the mattresses. A plank walk has also been added to its surface leading to the east shore of the light-house.

#### EAST T-HEAD.

The wall is mostly in shoal water, and previous to this year the only work remaining in place was one tier of mattresses for the upper half of its old length. This tier is double, one range on each side of the guide-piles. The late work previous to April 1, 1879, began at a point 500 feet below the junction of the T-head with dam No. 2, and extended to this junction. Here 10 mattresses form a second tier, and over them loose willows are laid and ballasted with stone until the work has an elevation of about 2 feet above average flood-tide.

Below this, extending to the island, loose willows and stone alone have been used to give the T-head about the same elevation.

#### THE NEW EXTENSION OF THE EAST T-HEAD.

Above the junction of dam No. 2 with the east T-head the old apron-mattresses are so covered and useless that they have been ignored in constructing the new work, and they may be disregarded in this description.

The new work is as follows: The lower arm of the T-head below dam No. 2 is continued above that point, nearly in the same line, 785 feet;

It is produced up-stream 1,215 feet in an arc of a circle having a radius of 2,255 feet, the convexity towards the channel. The foundation tier consists of 26 mattresses, some 30 and some 38 feet long, laid with their longer axis nearly to the right angle of the axis of extension, thus serving as an apron to mitigate scour. At a distance of 470 feet from dam No. 2, the structure is above average flood-tide. For the first 270 feet of this length, including the foundation tier, there are 6 tiers of mattresses and a layer of loose willows; for 200 feet farther there are 4 tiers of mattresses and a layer of willows. This whole length of 470 feet is lined on its channel side by upright mattresses, boarded on the inner side, whose lower edges rest on the foundation mattresses. For 315 feet farther up-stream, there are three tiers of horizontal mattresses mostly, although for short distances there are successively two tiers. On the uppermost of these, as a higher foundation, are tilted mattresses, boarded on one side, their upper edges some 3 feet above average flood-tide and their lower edges resting on the middle of mattress surfaces, about 7 feet below the same plane, averaging at this point to the end of the T-head, 1,215 feet higher up, or 2,000 feet above dam No. 2, there is of horizontal mattresses only the foundation tier, 38 feet wide; and the longer axis of this part of the extension is on a foundation on which rest tilted mattresses, nearly upright, from 24 inches in thickness. The upper edges of all these tilted mattresses rise about 3 feet above average flood-tide.

#### THE UPPER DAM, OR NEW DAM.

From the up-stream terminus of the T-head extension starts a new dam nearly at right angles to the T-head. It extends towards Northeast and its foundation is 1,880 feet long. As first constructed, the foundation consisted of two wide or broad ends with an intermediate narrow portion. The wider ends were built by placing the mattresses on bottom so that their ends should abut and their longer axes lie in the direction of the axis of the dam. For 66 feet in length there were two mattresses, giving a width of 126 feet. For 99 feet farther there were three mattresses, spreading out the base to a width of 189 feet. Thence, for 455 feet, the width was about 125 feet in two mattresses, and then came a long stretch of 1,020 feet having a single mattress 43 feet across dam. For the easterly 340 feet the line of mattresses was double, giving a total breadth of 116 feet to this portion of the foundation. These mattresses were nearly of the usual width. On the easterly end of this foundation a superstructure was laid as follows: Second tier, 2 feet thick, 43 feet wide, and 441 feet long, of seven mattresses, began 25 feet west of the line of the T-head, and 115 feet east of the starting point of the foundation. Third and fourth tiers, of the same number of mattresses, overlaid all but 15 feet of the length of the second tier, this terrace being at the westerly end. The third tier is 15 feet wide, and the fourth 33 feet wide, thus terracing the sides as well as the ends of the structure. Then tilted board-bottom mattresses were then placed on edge on the fourth tier, as a foundation, with their ends abutting, their upper edges being about 3 feet above average flood-tide. At the eastern end of the dam, over the length of 340 feet, forming what may be called the easterly abutment of the dam, five tiers of horizontal mattresses extend over 245 feet, leaving at the extreme end an extension of the foundation about 90 feet long. The lowest of these four

tiers is 35 feet wide and the highest 23 feet wide. The fifth tier's upper surface is within 1.5 feet of average flood-tide, and this is the top of the dam here.

Between these two abutments the dam consisted at first of 16 tilted mattresses, 2 feet thick, with board bottoms, or, rather, with a board side, their widths so adjusted to the depth of the water that the upper edge shall be from 2 to 3 feet above average flood-tide. They are from 16 to 19½ feet wide. Their lower edges rest on the middle line of the foundation or apron tier.

After this dam had been nearly finished, it was found that the foundation was being rapidly undermined in several places, and it became necessary to check this action at once, lest the whole structure should be endangered.

Mattresses of special sizes and shapes were constructed to fit holes in and under the foundation tier, as revealed by soundings. It is unnecessary to describe these. In all, 15 specially constructed mattresses were sunken, and afterwards a second foundation tier was sunken on them, covering a part of the width of the original foundation and 1,020 feet of its length between the abutments, as I have designated them. A second row of tilted mattresses was then placed edgewise on this new foundation, on the up-stream side of the original dam, the whole making in effect a second dam above and in contact with the first, comprising 30 mattresses in the foundation, and in the subfoundation to fill holes, and 10 boarded tilted mattresses on the flat foundation. The undermining ceased, and the condition of the dam and of the whole east T-head was very good July 1, 1879.

A large area, included between the new dam, Dam No. 2, the east T-head extension, and east dike, is fast filling up with accumulations of sediment, during the present low stage of the river. What will be the effect of a great and sudden rise in the river we have little data to prophesy on.

About 5,373 cords of willows and 862 cubic yards of stone were used in the two new structures at the head of the pass during the year.

All other constructions not referred to in this report are in a condition quite good enough for the purposes they serve.

#### DEPTHS OF THE HEAD OF PASSES.

In the eleventh report, depths in Southwest Pass and Northeast Pass, ascertained in March, 1879, were compared with depths found in March, 1878. I now compare soundings made, some in March, 1878, and some in March, 1879, with those taken July, 1879. A line over Southwest Pass mattress-sill gives mean depths 23.9 and 24.8 feet, respectively, indicating a deepening or depression of the mattresses of 0.9 feet in four months. Two hundred feet below this sill the mean depth was 30.76 feet in March, 1878, and 30.36 feet in July, 1879, a shoaling of 0.4 feet in 16 months.

In the Northeast Pass one line for comparison is 550 feet above its sill, and a second 600 feet below it. In the first case the deepening is from a mean depth of 25.45 feet in March, 1878, to 25.84 feet July, 1879, or a scour of 0.39 feet in 16 months. In the second case a shoaling from 29.1 feet in March, 1878, to 26.8 in July, 1879, or of 2.3 feet in 16 months, appears.

In order to determine the locations and amount of tendencies to changes of depth in the channel at the head of South Pass since April, 1878, two imaginary lines were drawn on this chart and that of July 10, 1879, so-as in all cases to be 200 feet apart across channel. These inclose, in each instance, about the best water for navigation at the respective



Within these lines reaches are considered, each 500 feet long, the soundings being distributed nearly uniformly, a mean of all s in each reach is ascertained. The results of the comparison are in the following table:

Distance from Sta. Cluster.	Mean depth of reach—		Increase of depth.
	April 12, 1878.	July 10, 1879.	
feet above.....	23.9	28.6	2.7
1000 feet above.....	25.9	28.2	0.3
feet below.....	27.1	31.5	4.4

#### CERTIFIED STATEMENTS OF DEPTHS.

There will be found herein all the certificates of depths that have been by me during the year, including those which formed the basis of Adams's claims for compensation for obtaining the 25, 26, and 30 feet channel. From these there can be ascertained the minimum depths widths at both the head and mouth of South Pass at various dates, on careful and accurate surveys.

Certificates were forwarded to the New Orleans Times, Picayune, Democrat, and Price-Current. Each statement was certified to as follows:

I certify that the above is a correct statement.

M. R. BROWN,  
Captain of Engineers, U. S. A.

Witness my hand and seal:  
Witnessed by order of the Hon. Secretary of War.

UNITED STATES ENGINEER OFFICE,  
Port Eads, La., June 23, 1879.

January 20, 1879, there was a practicable channel at least 23.9 feet deep at average flood-tide and at high-water of the day through the bar at the end of South Pass jetties everywhere throughout the pass, except over the bar at the Head of Passes, and a channel at least 21.4 feet deep at low-water of the day.

January 22, 1879, at Head of Passes the least depth of channel at average flood-tide and high-water of the day was 22.1 feet, and at low-water 20.6 feet.

February 19, 1879.—Over the bar at the mouth of South Pass, on the 13th of February, there was a channel at average flood-tide and at high-water of the day having a depth of 22.2 feet, with a width of 200 feet. At low-water of the day the least depth was 21.2 feet.

March 15, 1879.—Over South Pass bar the depth of water at average flood-tide, March 15, 1879, was 24.8 feet. The least width for this depth was 80 feet.

High-water of the day the least depth was 25.4 feet, and at low-water 23.8 feet. Head of Passes March 3 least depth of channel at average flood-tide was 23 feet, at high-tide 24.5 feet, and at low-tide 23.3 feet.

April 14, 1879.—Statement of the depth and width of the improved channel at the mouth of South Pass April 7, and of the channel at the head of South Pass April 11,

I certify that a channel existed on the 7th day of April, 1879, at the mouth of South Pass 25 feet deep, and in no place less than 230 feet wide on the bottom, between the bar at the mouth of the pass and the deep water of the Gulf of Mexico; also, that on the 7th day of April, 1879, there was at the head of South Pass a channel sufficiently wide for navigation, having a least depth of 24 feet, and that the 23-foot channel at the head of South Pass had nowhere less width than 125 feet.

May 13, 1879.—Through the bar at the mouth of South Pass, May 13, 1879, there was a practicable channel, having a depth of 26 feet. The 25-foot channel was 140 feet wide in its narrowest place. At the head of South Pass May 3, 1879, the least depth of the channel at average flood-tide was 24.2 feet; the length of channel having a less depth than 25 feet was 140 feet.

High-water of the day the least depth on the bar at head of South Pass was 25.3 feet, and at low-water 25.1 feet.

June 19, 1879.—At the mouth of South Pass, June 14, 1879, there was at average

flood-tide and at high-water of the day a channel having a least depth of 26 feet for a width of 205 feet in its narrowest part. At the same time there was a navigable channel 28 feet deep in its shoalest part. At low-water of the day these depths were diminished 1.2 feet.

At the Head of Passes, June 17, there was, at average flood-tide, a navigable channel having a least depth of 2.44 feet.

July 10, 1879.—At the mouth of South Pass, July 8, there was, at average flood-tide, a navigable channel having a least depth of 30.5 feet from deeper water in South Pass to deeper water in the Gulf of Mexico. At high-tide of the day this depth was 30 feet, and at low-tide 29.7 feet.

At the Head of Passes, July 10, there was, at average flood-tide, a navigable channel having a least depth of 26 feet.

*Certificates as bases of payments to Mr. Eads for obtaining the 25, 26, and 30 feet channels, respectively.*

PORT EADS, LA., April 10, 1879.

HON. GEORGE W. MCCRARY,  
*Secretary of War:*

(Through Lieut. Col. H. G. Wright, Acting Chief of Engineers.)

Statement of the depth, width, and extent of the improved channel at the lower end of South Pass, Mississippi, April 7, 1879.

I certify that on the 7th day of April, 1879, the channel in that portion of South Pass between the South Pass Light-house and the deeper water of the Gulf of Mexico, including a passage through the bar near the jetties' ends, had in its shoalest part a navigable depth of 27 feet, and that throughout this extent the 26-foot channel had a least width of 150 feet, and the 25-foot channel a least width of 230 feet.

M. R. BROWN,  
*Captain of Engineers, U. S. A.*

JUNE 19, 1879.

I certify that on the 18th of June, 1879, there was a channel at the mouth of South Pass, through the jetties, 26 feet in depth and not less than 200 feet in width at the bottom, measured at average flood-tide, and extending from a wider and deeper channel in South Pass to deeper water in the Gulf of Mexico.

M. R. BROWN,  
*Captain of Engineers, U. S. A.*

I certify that on the 17th June, 1879, there was a channel through the shoal at the head of South Pass having, at average flood-tide, a least depth of 24.4 feet.

M. R. BROWN,  
*Captain of Engineers, U. S. A.*

JULY 10, 1879.

I certify that on the 8th day of July, 1879, there was a channel at the mouth of South Pass, through the jetties, 30 feet in depth without regard to width, measured at average flood-tide, and extending from a wider and deeper channel in South Pass to deeper water in the Gulf of Mexico.

M. R. BROWN,  
*Captain of Engineers, U. S. A.*

JULY 10, 1879.

I certify that on the 10th day of July, 1879, there was a navigable channel through the shoal at the head of South Pass, having at average flood-tide a least depth of 26 feet.

M. R. BROWN,  
*Captain of Engineers, U. S. A.*

#### SEDIMENT OBSERVATIONS—MAINTENANCE OF CHANNEL.

Since July 1, 1879, Mr. Eads has been paid for obtaining the 26-foot, channel 200 feet wide, and the 30-foot channel without regard to width at the mouth of South Pass, and simultaneously the requisite depth at the head of South Pass. I refer to this because the many surveys required of me in connection with the attainment of these channels have prevented the collection of some of the data desired for my annual report, and have retarded the procurement of more. Simultaneous current observations in the three passes have been necessarily deferred until cold weather.

\* \* \* \* \*



## DEEP-SEA SURVEY TO A DEPTH GREATER THAN FIFTY FEET.

August, 1876, a survey was made along nine radial lines, starting from the ends of the jetties and projecting into a depth of about 320 feet. This survey was made on the United States dredgeboat *Essex*; such a ship, having a long deck high above the water, is needed to make such a survey within the limits of time at my disposal for the purpose.

No opportunity for repeating this survey presented itself until August, when I ascertained that I could secure the use of the same ship for a few weeks, paying her expenses from the appropriation for the operations and surveys of South Pass. Accordingly, on the 15th of August, the *Essex*'s commander reported to me with his ship at South Pass.

Several days with strong wind offshore occurred at once, and great care was taken to make no soundings on days when an examination of the existence of strong cross-currents, or of any cross-currents of more than one-third of a mile per hour. Nearly always these currents were significant. The boat had to be retained fifteen days in order to obtain the days appropriate for the work. The lines were very carefully run. Checks were made on the angles by having from three to five assistants reading them simultaneously, and by running on ranges, &c. A capable leadsmen watched another who cast the lead, and the results are as reliable as can be obtained, except by the slow and costly method of the accurate apparatus employed by the Coast Survey, losing an hour at each cast.

It must be borne in mind that we have very little knowledge of the bottom, and we know that this distance from the lead sinks into the bottom, and we know that this distance is not uniform over the whole area surveyed, and that it may not be the same in a certain locality at different times. Still the surveys are very valuable, and give us the best attainable data.

Lines are selected, which almost exactly coincide with lines sounded in August, 1876, and which divide pretty equally the angular distance between lines which inclose most of the water of the survey. These are delineated on sheet No. 4 graphically, and they show the amount of shoaling and deepening between August, 1876, and June, 1879. They are numbered 1, 2, 3, 5, and 11.

The entire survey is charted on sheet No. 4. Fourteen lines in all were run. The mean intersection of these lines with the contour lines successively 50 feet deeper by designation, that is, beginning at the 150-foot contour and increasing by successive stages 50 feet at a time until the 300-foot contour is included, will give us, approximately, the mean position of the several contours with reference to any given base. Including only the area common to the surveys of both 1876 and 1879, we have in the first 9 lines, and in the second 11 lines. We use for comparison only 5 lines, which nearly coincide in location in the two surveys. Reference to a right-line base joining the old ends of the jetties, and nodular ordinates dropped from the points of intersection of the lines of soundings with these several contours give for the two surveys results as follows:

*Movements of curves from August, 1876, to June, 1879.*

Designation of contour.	150 feet.	200 feet.	250 feet.	300 feet.
Old seaward, in feet.....	170	395	1,105	275
Landward, in feet.....				

SURVEY OF SOUTH PASS FROM NEAR HEAD OF PASSES LIGHT-HOUSE  
TO SOUTH PASS LIGHT-HOUSE.

In the ninth report I have given an account of the methods followed in making a survey of the main body of South Pass in January, 1878.

In the month of June, 1879, the survey was repeated, using the same methods as before.

The results are apparent in charts No. 5 and 6, appended, and the sections on sheet No. 5.

The table given below shows the amount of fill or scour in the interval of about a year and a half in successive sections 1,000 feet long, and the sections represented on sheet No. 5 show graphically the difference in mean depths obtained by a comparison of the survey of June, 1879, with that of January, 1878:

*Comparative mean depth of South Pass for each 1,000 feet in length from station Bayou Grande to South Pass light-house, from surveys made January, 1878, and June, 1879.*

From Bayou Grande down, in divisions 1,000 feet long.	Distance in miles and deci- mals of a mile of center of division above East Point Station.	Mean depth and number of soundings.				Depth of average fill or scour over area from Jan- uary, 1878, to June, 1879, in feet.	Area of division in square yards.	Total amount of scour or fill from January, 1878, to June, 1879, in cubic yards.	
		January, 1878.		June, 1879.				Scour.	Fill.
		Mean depth.	Number of soundings.	Mean depth.	Number of soundings.				
0 to 1,000	5.73	20.717	39	21.201	58	0.484	101,111	16,312	.....
1,000 to 2,000	5.54	23.682	45	23.827	54	1.145	91,666	34,986	.....
2,000 to 3,000	5.35	25.624	41	25.358	55	F. 0.266	82,777	.....	7,339
3,000 to 4,000	5.16	25.744	43	26.137	53	0.393	76,666	10,043	.....
4,000 to 5,000	4.98	27.163	38	25.636	49	F. 1.527	73,888	.....	37,609
5,000 to 6,000	4.79	29.558	39	30.020	44	0.462	66,666	.....	
6,000 to 7,000	4.60	31.920	31	32.082	40	0.162	61,111	3,300	.....
7,000 to 8,000	4.41	29.681	27	29.391	37	0.310	63,333	66,544	.....
8,000 to 9,000	4.22	29.820	35	30.617	51	0.797	65,555	17,415	.....
9,000 to 10,000	4.04	29.002	34	29.606	53	0.484	67,777	15,679	.....
10,000 to 11,000	3.85	26.800	37	28.241	41	1.441	70,555	33,890	.....
11,000 to 12,000	3.66	25.487	39	25.755	60	0.268	75,000	6,700	.....
12,000 to 13,000	3.47	26.535	31	26.743	44	0.208	75,000	5,200	.....
13,000 to 14,000	3.28	27.835	45	27.535	48	F. 0.300	68,888	.....	6,888
14,000 to 15,000	3.09	29.125	36	30.055	45	1.530	61,111	24,756	.....
15,000 to 16,000	2.90	26.355	32	31.477	39	2.122	56,666	40,081	.....
16,000 to 17,000	2.71	30.632	37	31.829	41	1.197	56,666	22,609	.....
17,000 to 18,000	2.52	29.355	29	30.048	31	0.693	58,333	13,474	.....
18,000 to 19,000	2.33	29.189	37	29.011	43	F. 0.178	61,666	.....	3,633
19,000 to 20,000	2.14	26.376	34	28.313	38	1.937	65,000	41,968	.....
20,000 to 21,000	1.95	25.000	40	26.579	59	1.599	72,777	36,849	.....
21,000 to 22,000	1.76	22.478	28	26.427	40	3.947	74,444	97,993	.....
22,000 to 23,000	1.57	26.648	31	27.333	44	0.685	72,777	16,617	.....
23,000 to 24,000	1.38	24.706	39	26.567	43	1.861	72,222	44,801	.....
24,000 to 25,000	1.19	26.530	42	26.193	59	F. 0.337	72,222	.....	8,112
25,000 to 26,000	1.00	28.059	44	26.980	57	F. 1.079	71,111	.....	25,576
26,000 to 27,000	0.81	26.328	38	25.800	56	F. 0.432	68,888	.....	9,919
27,000 to 28,000	0.62	26.888	34	26.946	49	0.058	67,777	1,310	.....
28,000 to 29,000	0.43	26.529	29	28.205	39	1.676	58,333	32,588	.....
Total							1,959,986	533,391	90,101

Total area from Bayou Grande down ..... square yards.. 1,959,986  
 Total scour from January, 1878, to June, 1879 ..... cubic yards.. 434,290  
 Average depth of scour ..... feet.. 0.664  
 Total scour from June, 1879, to June, 1879 ..... cubic yards.. 737,536  
 Average depth of scour ..... feet.. 0.113



relative mean depth of South Pass for each 1,000 feet in length, from station Bayou Grande to Head of Pass, from surveys made January, 1878, and June, 1879.

Distance in miles and decimals of a mile of center of division above East Point Station.	Mean depth and number of soundings.				Depth of average fill or scour over area from January, 1878, to June, 1879, in feet.	Area of division in square yards.	Total amount of scour or fill over area from January, 1878, to June, 1879, in cubic yards.		
	January, 1878.		June, 1879.				Scour.	Fill.	
	Mean depth.	Number of soundings.	Mean depth.	Number of soundings.					
1,000	5.92	20,578	39	21,477	64	S. 0.899	104,444	31,298	.....
2,000	6.11	25,866	36	22,872	55	S. 2.994	92,222	.....	92,037
3,000	6.30	25,164	31	25,006	46	S. 0.158	82,222	.....	4,330
4,000	6.49	29,768	29	29,015	33	S. 0.753	72,222	.....	18,127
5,000	6.68	33,458	31	30,140	40	S. 3.318	64,444	.....	71,275
6,000	6.87	33,281	33	32,841	43	S. 0.440	63,666	.....	9,337
7,000	7.06	30,080	30	32,181	44	S. 2.101	68,333	47,856	.....
8,000	7.25	29,813	31	30,840	39	S. 1.027	67,222	23,012	.....
9,000	7.44	31,741	36	30,736	41	S. 1.005	62,222	.....	20,844
10,000	7.63	32,200	32	31,042	42	S. 1.158	63,333	.....	24,446
11,000	7.82	33,456	30	30,062	48	S. 3.393	67,777	.....	76,656
12,000	8.01	31,587	31	29,873	42	S. 1.714	68,888	.....	39,368
13,000	8.20	31,051	41	28,120	48	S. 2.931	67,777	.....	66,218
14,000	8.39	31,352	41	29,676	36	S. 1.716	70,000	.....	40,040
15,000	8.58	25,665	38	21,691	51	S. 3.924	94,444	.....	125,006
16,000	8.77	20,713	52	16,706	86	S. 4.007	122,777	.....	163,611
17,000	8.96	18,354	51	18,861	91	S. 0.507	113,333	18,815	.....
18,000	9.14	22,210	47	20,492	81	S. 1.718	105,555	.....	6,044
19,000	9.33	23,564	39	23,269	71	S. 0.295	95,000	.....	9,341
20,000	9.52	24,954	48	25,525	67	S. 0.571	84,444	16,072	.....
21,000	9.71	25,527	36	28,178	51	S. 2.651	77,777	68,728	.....
22,000	9.90	28,487	32	32,106	32	S. 3.619	72,222	87,123	.....
23,000	10.09	31,256	25	32,835	40	S. 1.579	80,888	42,574	.....
1,861,212	.....	.....	.....	.....	.....	.....	1,861,212	335,478	766,780

Area from Bayou Grande up.....	square yards..	1,861,212
from January, 1878, to June, 1879.....	cubic yards..	431,302
depth of fill.....	feet..	0.695
from June, 1875, to June, 1879.....	square yards..	3,101,788
fill.....	feet..	4.998
Area of Pass.....	square yards..	3,821,198
scour in excess of fill from January, 1878, to June, 1879.....	cubic yards..	2,988
depth of scour for entire length of Pass.....	feet..	.002
in excess of scour from June, 1875, to June, 1879.....	cubic yards..	3,028,635
depth of fill for entire length of Pass.....	feet..	2.377

The ninth report is a table corresponding to the present one, comparing the Coast Survey of 1875 with my own of 1878.

The main Pass, it will be seen, is considered in two sections, one from Bayou Grande upward, to near the head of South Pass; and the other from Bayou Grande down, to South Pass light-house.

In the first or upper part the average depth of fill is 0.695 foot and the total amount of fill 431,302 cubic yards. For the second, or lower part, the average scour is 0.664 foot and the total amount of scour 40 cubic yards.

The net fill in excess of scour from June, 1875, to June, 1879, is a little over 1,000,000 cubic yards for the whole pass above South Pass light-house, making a net decrease of depth of about 2.4 feet.

TABLE OF ONE AND A QUARTER SQUARE MILES JUST SEAWARD THE ENDS OF SOUTH PASS JETTIES.—COMPARISONS OF DEPTHS IN JULY, 1878, WITH THOSE OF JULY, 1879.

This fan-shaped area was surveyed in June, 1876, June, 1877, July, 1878, and now again in July, 1879.

This subdivision into 21 smaller areas, identical in all cases, has been before noted. These subdivisions have been covered with soundings,

as uniformly as is practicable, and the mean depth of each subdivision at the various dates has been ascertained.

The whole cubic volume of water divided by its surface gives us a mean depth for the whole area, and thus we ascertain, generally, the nature and amount of changes in this area.

During the last twelve months there has been a mean shoaling of 2.56 feet. In two years the shoaling is 0.76 foot.

The following table gives the comparisons at the different dates, in detail, of the quantities of water in 21 subdivisions of a fan-shaped area containing about  $1\frac{1}{2}$  square miles immediately seaward of the ends of South Pass jetties.

The following table gives the movement of curves from July, 1878, to July, 1879, ascertained by measuring ordinates 50 feet apart at right angles with a base through a point in the east jetty 11,545 feet below East Point Station, the base at right angles with the chord of the east jetty terminating at same point:

Designation of curve.	20'.	30'.	40'.	50'.	60'.	70'.	80'.	90'.	100'.
Advanced seaward, in feet .....		9	71	257	342	282	365	328	531
Reteced landward, in feet .....	10								

Acknowledgments are due to First Assistant Engineer C. Donovan, and Assistant Thos. L. Raymond, not only for their general faithfulness and efficiency in executing the work intrusted to them, but particularly for persistent and laborious application to the various details of the many surveys of the year and to office work, amidst the prostrating influences of climatic conditions in the swampy and malarious country which is the scene of their arduous labors.

#### FINANCIAL STATEMENT.

Amount available from appropriations for examinations and surveys at South Pass of the Mississippi River, August 12, 1878..	\$13,741 97
Amount appropriated by act approved March 3, 1879.....	24,000 00
	<hr/>
Amount expended during the fiscal year ending June 30, 1879..	8,916 60
Outstanding liabilities July 1, 1879.....	7,577 68
	<hr/>
	16,494 28
Amount available July 1, 1879.....	<hr/>
	21,247 69
Amount available July 1, 1878.....	\$15,000 00
Amount appropriated by act approved March 3, 1879.....	24,000 00
	<hr/>
	39,000 00
Amount expended during the fiscal year ending June 30, 1879, as follows:	
As per account of Maj. C. B. Comstock, from July 1, 1878, to August 12, 1878.....	\$1,258 03
As per accounts of Capt. M. R. Brown, from August 12, 1878, to July 1, 1879.....	8,916 60
Outstanding liabilities July 1, 1879.....	7,577 68
	<hr/>
	17,752 31
Amount available July 1, 1879.....	<hr/>
	21,247 69
<i>Estimate of funds required for examinations and surveys at South Pass, Mississippi River, for the fiscal year ending June 30, 1881.</i>	
Three assistant engineers.....	\$5,400
Ten first-class seamen and two steam engineers .....	8,600
Office rent .....	300
Rent of officers' quarters, i. e. commutation .....	422
Rent of assistant engineers' quarters .....	240



and transportation of assistants.....	\$500
for two launches.....	1,200
for launches.....	1,500
materials and supplies for running launches.....	500
forery and supplies for office.....	500
photographing charts.....	400
for telegrams, express charges, &c.....	300
for al and repairs of rowboats and other contingencies, including a deep-sea sweep, if practicable.....	2,500
Total.....	22,362

Very respectfully, your obedient servant,

M. R. BROWN,  
*Captain of Engineers, U. S. A.*

## FORT LEAVENWORTH MILITARY PRISON.

GOVERNOR'S OFFICE,  
UNITED STATES MILITARY PRISON,  
*Fort Leavenworth, Kans., July 21, 1879.*

I have the honor to transmit herewith annual reports of the  
wardmaster, surgeon, and chaplain, connected with this prison, for  
the year ending June 30, 1879.

I also inclose herewith a tabular statement of labor performed, pris-  
oners received, discharged, &c.

During the year, large extensions of store and shop room have been  
added to the prison, as will be seen from the following details:

In the month of October, 1878, the building occupied as a storehouse  
by the chief commissary of subsistence of this department was vacated  
and turned over to the prison. Immediately on this transfer, work was  
begun on a new building, which was erected so as to connect prison  
building No. 2 with the building lately acquired, thus serving the double  
purpose of improving the appearance of the front of the prison and ac-  
quiring more room. This new building is two stories high, and is 40 by  
100 feet; its lower story is occupied as a store-room, and the upper one is  
at present as a chapel.

In addition has also been made to the building recently occupied as com-  
missary storehouse, of 100 by 40 feet, two stories high, with basement.  
This building is occupied as follows, viz: Upper story, barrack-room for  
100 men; lower story, cook-room for guard and prisoners, also dining-room  
for guard; basement, dining-room for prisoners, bakery, and scullery.

In addition, of 100 by 38 feet, and three stories high, has likewise  
been made to the shop building, the first floor being an extension of the  
blacksmith shop, the second floor of the carpenter shop, and the third  
floor is to be used as a shoe-shop.

Besides all these improvements, work has progressed on the prison-  
house so that now 1,517 feet are completed. Owing to the very severe  
winter last winter, work on the wall was somewhat impeded, so that  
I cannot report as much progress as we did last year.

It is very gratifying to be able to report that the conduct of the pris-  
on as a whole has been very good, and that severe disciplinary  
measures have seldom had to be resorted to. Fifteen escaped during  
the year, but seven were recaptured, making a loss by escape of eight.  
The health of the institution has also been good, as will be seen from  
the surgeon's report. As the embarrassments heretofore existing on  
account of the crowded condition of everything have been removed, the  
general condition of the prison ought to be better the ensuing year than  
it has ever been, unless, indeed, some unforeseen contingency arises.



Work in the different shops has been very successfully carried on. During the year 8,530 barrack chairs were manufactured, crated, and shipped to the different posts; also 40,000 tent pins; but this represents only a small portion of the work done in the carpenter-shop. There were also manufactured in the shoe-shop 51,756 pairs of shoes.

We have under cultivation this year, as a prison farm, about 51 acres, planted as follows, viz: 30 acres with potatoes, 11 with corn, 3 with cabbage, and the remaining 7 acres with other vegetables, such as onions, beets, turnips, &c. The crops look well and promise a good yield. All this land, with the exception of 7 acres, has been fenced, cleared, and broken with prison labor.

It is noticed in the annual report of the Quartermaster-General that he has charged the prison with clothing to the value of \$9,422.21, but it is not seen that he has allowed the prison any credit for labor given his department. The inclosed tabular statement marked B shows in detail and aggregate the labor given the Quartermaster's Department by the prison and for which no compensation has been received. It would seem but fair that due credit would be given for this labor.

There is a fund of \$6,708.02 on hand, deposited in First National Bank, Leavenworth, Kans., the accumulation of earnings of prison labor. On the 19th of November, 1878, a letter dated Adjutant-General's Office, November 14, 1878, was received. In this letter a doubt was expressed as to the legality of expending any of the prison earnings without further and more definite legislation on the matter. Would respectfully inquire what disposition will be made of this money.

It will be seen from the following statement the amount of prison appropriation received, expended, and balance turned into the Treasury during the year, viz:

Summary.	Appropriation.	Expended.
For subsistence.....	\$27,922 50	\$17,439 89
For fuel.....	10,000 00	8,633 08
Hay for bedding.....	280 00	189 54
Purchase of miscellaneous stores, stationery, material for clothing for discharged prisoners, tools, &c.; repairs and cleaning machinery; pay of foreman, mechanics; reward for apprehension and delivery of escaped prisoners; donations to prisoners at discharge.....	14,766 50	14,073 88
Repair of buildings.....	1,500 00	1,500 00
Extension to shop, new mess-room, &c.....	10,000 00	10,000 00
Completion of hospital.....	2,000 00	1,999 83
	66,469 00	53,836 23
Balance turned into Treasury.....		12,632 78
Total.....	66,469 00	66,469 00

I beg leave to acknowledge my sincerest thanks to the department commander for the warm encouragement and substantial aid which he has extended to me in every undertaking. Whatever success has attended my labors here, is very much due to his hearty approval.

It also gives me great pleasure to acknowledge my obligations to the different officers on duty at the prison for their strict attention to duty, hearty co-operation, and exemplary conduct.

I am, sir, very respectfully, your obedient servant,

A. P. BLUNT,

*Brevet Colonel, U. S. A., Governor.*

To the ADJUTANT-GENERAL,  
U. S. Army, Washington, D. C.

(Through Headquarters Department of the Missouri, Fort Leavenworth, Kans.)

[Indorsement.]

HEADQUARTERS DEPARTMENT OF THE MISSOURI,  
Fort Leavenworth, Kans., July 30, 1879.

respectfully forwarded to the Adjutant-General of the Army.  
justice to the military prison, credits should be allowed by the  
Quartermaster-General in his report for work done by the prison for  
department, and for which no money has been paid. It will be  
recorded in the report of the Quartermaster-General that the prison is  
equipped with \$9,000 for clothing, but no credit is given to the prison  
amounts due to it from that department.  
fair and full statement of both debt and credit is due to the prison,  
in my opinion, should be made.  
attention is invited to the fact that there is a large sum in the First  
National Bank of Leavenworth, the accumulation of prison earnings,  
concerning the expenditure of which a doubt has been expressed by the  
Adjutant-General of the Army.  
instructions as to the disposition of this money are requested.

JNO. POPE,

*Brevet Major-General, Commanding.*

Statement of funds expended in the service of the quartermaster's department at military prison,  
Fort Leavenworth, Kans., by Capt. A. P. Blunt, A. Q. M., U. S. A., in the fiscal year  
ending June 30, 1879, on account of appropriation for that fiscal year.

	Expended.	Received.
<b>REGULAR SUPPLIES.</b>		
Food sold to officers.....		\$258 00
<b>INCIDENTAL EXPENSES.</b>		
Laundry, compensation of.....	\$1,720 00	1,720 00
Laundry, hire of.....	240 00	240 00
<b>Total.....</b>	<b>1,960 00</b>	<b>1,960 00</b>
<b>BARRACKS AND QUARTERS.</b>		
Repairs, windows for.....	275 00	275 00
Lease of storehouse, erection of.....	8,797 72	10,000 00
<b>Total expenditures.....</b>	<b>9,072 72</b>	<b>10,275 00</b>
<b>Total amount.....</b>	<b>9,072 72</b>	<b>10,275 00</b>
<b>ARMY TRANSPORTATION.</b>		
Laundry, hire of.....	1,200 00	1,200 00
Laundry, hire of Fort Leavenworth.....	8,640 61	8,636 25
<b>Total expenditures.....</b>	<b>4,840 61</b>	<b>6,836 25</b>
<b>Balance on hand.....</b>	<b>1,965 64</b>	
<b>Total amount.....</b>	<b>6,836 25</b>	<b>6,836 25</b>
<b>CLOTHING, CAMP AND GARRISON EQUIPAGE.</b>		
Laundry, hire of clothing and clothing material.....	207 15	
Laundry, hire of clothing and clothing material.....	3,525 55	
Laundry, hire of clothing and clothing material.....	606 30	7,397 78
Laundry, hire of clothing and clothing material.....	1,880 00	
<b>Total expenditures.....</b>	<b>6,219 00</b>	<b>7,397 78</b>
<b>Balance on hand.....</b>	<b>178 78</b>	
<b>Total amount.....</b>	<b>6,397 78</b>	<b>7,397 78</b>
<b>HOSPITALS.</b>		
Laundry, hire of hospitals.....		155 00
<b>Balance on hand.....</b>		<b>155 00</b>
<b>MILITARY PRISON.</b>		
Laundry, hire of military prison.....	38,579 56	38,710 85
<b>Balance on hand.....</b>	<b>131 27</b>	
<b>Total amount.....</b>	<b>38,710 85</b>	<b>38,710 85</b>

## RECAPITULATION.

	On hand and received.	Transferred.	Expended.	Balance.
Regular supplies .....	\$258 00	\$258 00		
Incidental expenses .....	1,909 00		\$1,909 00	
Barracks and quarters .....	10,275 00	1,202 28	9,072 72	
Transportation of the Army .....	8,838 25		4,840 61	\$1,995 64
Clothing, camp and garrison equipage .....	7,337 78	1,060 00	6,219 00	178 78
Hospitals .....	155 00			155 00
Military prison .....	28,719 85		28,579 58	121 27
Total .....	65,692 88	2,460 28	60,671 91	2,460 69

Respectfully submitted.

A. P. BLUNT,

*Captain and Assistant Quartermaster, U. S. Army.*

UNITED STATES MILITARY PRISON,

*Fort Leavenworth, Kans., July 16, 1879.*

*Statement of funds expended in the service of the quartermaster's department at United States military prison, Fort Leavenworth, Kans., by Capt. A. P. Blunt, assistant quartermaster U. S. A., in the fiscal year ending June 30, 1879, on account of appropriations for fiscal year 1877-78.*

	Expenses.	Receipts (on hand).
BARRACKS AND QUARTERS.		
Construction of chapel at Fort Leavenworth, Kans. ....	\$2,566 17	\$2,566 17

No transfers.

Respectfully submitted.

A. P. BLUNT,

*Captain and Assistant Quartermaster, U. S. Army.*

UNITED STATES MILITARY PRISON.

*Fort Leavenworth, Kans., July 16, 1879.*

## PUBLICATION OF WAR RECORDS.

WAR DEPARTMENT,

*Washington City, September 1, 1879.*

SIR: The preparation for the publication of the official records of the war of the rebellion has steadily progressed since the date of my last report, but the amount of labor involved in examining the mass of records stored in this city, in making judicious selections from them, and in the verification of the copies made, can hardly be appreciated by those not immediately connected with the War Department.

The records of the Union armies are very complete. They have been thoroughly examined for the years 1861 and 1862, and in part for the later years of the war. The Confederate records are yet very incomplete; they are kept in insufficient space, and have never been so in-



or catalogued that they could be systematically examined. A queue is now being made.

War Department agent for the collection of Confederate records (Major Marcus J. Wright) has been successful in the discharge of his

By gift or loan, many very valuable documents have been at the disposal of the government. The Southern Historical Society has given us free use of its important collection. Through the aid of Generals Johnston and Pemberton, we have now the inside story of the siege of Vicksburg, and the Confederate side of the campaign of Atlanta and of the Carolinas. Generals Wheeler, Jones, and others, among others, have also placed valuable papers at our disposal. A general disposition is manifested among the ex-Confederates to contribute material for the official history of the war.

There are three or four collections of "Confederate Records" held for me, but I respectfully renew my objections to that method of procuring property. It is submitted that there is no propriety in such purchase. That, strictly speaking, some of the records belong to the government, and that the fact that the government has refrained from purchasing them, ought to induce the present holders to permit the authorities to make use of them. Moreover, the price of such things is purely arbitrary. The government stands ready to publish to the world every authenticated document of historical value, and documents thus published must carry greater weight than those appearing without guarantee of genuineness. If the existing rule of making no purchase be adhered to, I believe that public sentiment will force every important Confederate document into the hands of the government.

My urgent solicitation of an ex-Confederate officer has been employed as one of the clerks in my office. The necessity for having some one conversant with the *personnel* of the Confederate armies has long been apparent, but the appropriations have not justified the employment of special clerks until now. The gentleman selected is specially qualified and was vouched for by distinguished men of both the great political parties.

The present Congress has made no provision for the publication of any of the records. In my judgment some such publication is now desirable. Publication of the official records of the war of the rebellion for the year ending December 31, 1861, can be made in eight octavo volumes including maps, eight hundred pages each, and the cost of composition and stereotyping, if the work is done at the Government Printing Office, would not exceed \$9,000. The further cost of the publication, of course, depend upon the number of copies printed, the quality of the paper, and the style of binding. No estimate is made for the publication of maps, because they should be prepared and published under the direction of the Chief of Engineers, and should form a separate series. It is suggested that any money appropriated for this purpose be made available till the work is actually completed.

In order to invite your attention to so much of my report of September 1861 as refers to the manner in which the war records should be published, and, with all deference, I respectfully urge that a publication of official reports of military operations, segregated from the correspondence, orders, returns, &c., immediately connected therewith, would, by simplifying the labor of the compiler, prove a most satisfactory arrangement of the matter to be published. The arrangement proposed would record every military event, not only as an isolated incident but as an incident of the campaign to which it belonged, in chronological order; would give the correspondence, &c., immediately con-

nected with such military events therewith; and would, as far as possible, give both the Union and Confederate versions of any event of controversy in the same volume.

I desire especially to invite your attention to the question of extra compensation to Messrs. Kirkley and Tasker, of the Adjutant-General's Office, whose special services in connection with the war records have before been brought to your attention. Their assistance in my work is extra duty to them and most valuable to my office. It obviates the necessity for another clerk in my establishment, and there seems to be good reason for some substantial recognition of it.

The force now employed in my office is as follows:

## CLERKS.

Class IV .....	
Class III .....	
Class II .....	
Class I .....	
Class \$1,000 .....	
Copyists .....	

## PRINTING OFFICE.

Foreman .....	
Pressman .....	
Compositors .....	
Assistant messengers .....	
Watchman .....	
Agent .....	

Total .....	
-------------	--

Very respectfully, your obedient servant,

ROBERT N. SCOTT,  
*Brevet Lieutenant-Colonel, U. S. Army.*

The SECRETARY OF WAR.



# REPORT OF THE SECRETARY OF THE NAVY.

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WASHINGTON CITY, D. C.,  
*Navy Department, November 30, 1879.*

**SIR:** I have the honor to submit the regular annual report of the condition and operations of the Navy Department for the fiscal year ending June 30, 1879. The expenditures for that period and estimates for the fiscal year ending June 30, 1881, are included.

The condition of the Navy has greatly improved during the last year. There are now in commission 45 vessels, consisting of cruisers, monitors, and torpedo boats. Of the different classes, 16 can be put in condition for sea service in a few months, and 20 could be made ready in an emergency. With this done the fighting force of the Navy, which might be made available in a very short time, would consist of 81 vessels of all classes. And if to this number be added the 4 monitors, *Terror*, *Puritan*, *Amphitrite*, and *Monadnock*, and 8 powerful tugs, which can be fitted for either cruisers or torpedo boats, our whole effective fighting force would consist of 93 vessels. The monitors could be completed, with the necessary appropriations, without much delay. Of the vessels now used as receiving ships, 7 are unfit for any other purpose. There are 27 vessels unfit for naval purposes of any kind whatever, but which are a positive expense, as it is necessary to keep in employment a force of ship-keepers to preserve them from entire destruction. Some of them might be profitably converted into merchant vessels, and it would be economy to sell the whole; in which event I repeat the recommendation heretofore made, that the Department be authorized to use the proceeds in either building new or repairing other vessels, instead of being required, as the law now directs, to cover them into the Treasury.

## SQUADRONS.

**THE EUROPEAN SQUADRON.**—Rear-Admiral William E. Le Roy, having been relieved from duty as commander-in-chief, at his own request, Rear Admiral John C. Howell has been assigned to the command. Since my last report the *Vandalia* and *Marion* have been withdrawn from this squadron, for the reasons then stated, and the *Wyoming* and *Enterprise* have taken their places. The *Quinnebang* has also been added. The *Gettysburg* was found to be entirely unfit for service. Her iron plates

were very much corroded and altogether unsafe, and her machinery broken down. She was an English-built vessel, was captured while running the blockade during the civil war, and was entirely unfit for a man-of-war. It being considered a dangerous experiment to venture across the Atlantic with her, she was sold at Genoa, Italy, under the direction of Rear-Admiral Howell, for \$10,983.46, and the money has been covered into the Treasury. The ships now composing this squadron are as follows: Trenton, Wyoming, Enterprise, and Quinnebang. The Despatch has been detached and is now being repaired. The Alliance is on the way home.

THE ASIATIC SQUADRON remains unchanged in the command. The Kearsarge and Tennessee have reached the United States and have been repaired. The Tennessee will be ready for sea in a few days. The Monongahela has reached San Francisco, has been put out of commission, and now awaits such repairs as she may need. The following ships now compose this squadron, to wit: the Richmond, Ashuelot, Monocacy, Alert, Ranger, and Palos.

THE NORTH ATLANTIC SQUADRON.—After the transfer of Rear-Admiral Howell to the Mediterranean, Rear-Admiral Robert H. Wyman was placed in command of this squadron. The Tennessee will be attached to this squadron, and besides that vessel it will be composed of the Powhatan, Vandalia, New Hampshire, Pawnee, Kearsarge, and Nipsic. The monitors also remain attached to it.

THE SOUTH ATLANTIC SQUADRON.—Commodore E. T. Nichols, who has had command of this squadron, having been promoted to the rank of rear-admiral, and his cruise having expired, Commodore Andrew Bryson has been placed in command. The Hartford and Essex have been brought home for repairs and new crews, and the Shenandoah and Wachusett have taken their places.

THE PACIFIC SQUADRON remains under the same command as last year. It consists of the following vessels: The Pensacola, Lackawanna, Alaska, Tuscarora, Adams, Onward, and the Marion is under orders to join it without delay.

The ships assigned to special service are as follows: The Ticonderoga, Constitution, Minnesota, Michigan, Saratoga, Portsmouth, Rio Bravo, Tallapoosa, Alarm, Intrepid, Constellation, and Jamestown. The St. Mary's yet remains in possession of the city of New York, as a training ship in the interest of the merchant marine.

The Minnesota, Constitution, Saratoga, and Portsmouth, are in use as training ships for boys. The Ticonderoga is still engaged in special service on the coasts of Africa and through the Indian Seas, and when last heard from was at Aden, in Arabia, having had that far a most satisfactory and successful cruise. It is confidently expected that material benefits to our commerce will result from this expedition, and that it will become the means of establishing new relations between this country and the continent of Africa and the adjacent islands. The

**Michigan** remains upon the lakes. The **Rio Bravo** is continued in the **Rio Grande River** at **Brownsville**. The **Tallapoosa** is yet engaged as a transport vessel. The **Constellation** has recently sailed for **Gibraltar**, to transport a new crew for the **Trenton**, and to return from that ship those whose terms of service have expired to the **United States**. The **Jamestown** was sent to **Sitka**, in **Alaska**, during the last summer, to furnish protection to persons and property, there being at that time an outbreak threatened by the **Indians**. It yet remains there, and its officers have done much valuable work in surveying the harbors, erecting wharves, and otherwise examining into and reporting upon the condition of affairs.

The **Plymouth** has been put in ordinary in consequence of the appearance of the yellow fever which broke out last summer, and will be kept in this condition until it shall be satisfactorily demonstrated that she can be safely sent to sea again.

#### EXPENDITURES.

The amount of appropriations applicable to the current expenses of the fiscal year ending June 30, 1879, was, as stated in my last annual report, \$14,528,431.70. Subsequently, however, to the estimate of this amount an appropriation was made to cover deficiencies previously existing on account of pay due clerks, clothing undrawn, and military stores in the Marine Corps, which made the entire amount \$14,538,646.17. The net amount drawn from the Treasury by warrant during that period was \$13,343,317.79, as shown by the books of the Department. But the true net expenditure can only be shown by deducting the balances held by disbursing officers at the end of the year for outstanding salaries and bills liquidated and not paid, but which when paid enter into the current expenditures of the present year. This amount on June 30, 1879, was \$283,725.99, as shown by the books of the Fourth Auditor's Office, which, being deducted from the amount drawn out, leaves an aggregate balance unexpended of \$1,479,054.37 which stood to the credit of the Department at the beginning of the present fiscal year. There should, however, be deducted from this balance the sum of \$60,809 appropriated for the Naval Asylum, as that sum was brought to the credit of the asylum on March 24, 1879, by requisition in its favor, and is included in the exhibit of expenditures chargeable to Navy appropriations at that time as refunded and deducted from the amount drawn in that month. The net amount, therefore, which stood to the credit of the Department at the close of the year was \$1,418,245.37—that is, the total net expenditure for the fiscal year ending June 30, 1879, was that much less than the appropriations. Nearly all this unexpended balance stood to the credit of the office of the Secretary of the Navy and of the respective bureaus of the Department, as follows:

Secretary's Office.....	\$37, 809 31
Bureau of Navigation .....	47, 602 45
Bureau of Ordnance.....	37, 564 04

Bureau of Equipment and Recruiting.....	\$183,003 12
Bureau of Yards and Docks.....	62,767 17
Bureau of Medicine and Surgery.....	16,734 52
Bureau of Provisions and Clothing.....	474,955 35
Bureau of Construction and Repair.....	17,513 51
Bureau of Steam Engineering.....	37,078 54
General account of advances.....	219,491 37
Amount in hands of disbursing-officers, as shown above.....	283,725 99

Total..... 1,418,245 37

In connection with this statement of the amount in the hands of disbursing officers, including those serving both on foreign and home stations, it is proper to say that the accuracy with which these balances are now ascertained is greatly owing to the fidelity of the pay corps of the Navy in making returns of disbursements; and I may, with propriety, add that there is not at the present time a single defalcation amongst all the officers of that corps to the extent of a dollar.

The following table shows the amount of expenditures by warrant and the amount refunded, as well also as that expended from the close of the year to November 1, 1879:

*Exhibit of expenditure chargeable to Navy appropriations.*

Date.	Drawn.	Refunded.	Expended.
APPROPRIATIONS FOR 1878-1879.			
1878.			
July.....	\$1,185,781 89		\$1,185,781 89
August.....	1,480,120 70	\$68,299 11	1,411,821 59
September.....	1,051,405 89	101 37	1,051,304 07
October.....	1,023,236 16	2,580 27	1,020,655 89
November.....	1,550,964 02	26,295 92	1,524,668 10
December.....	1,011,861 14	15,209 79	996,651 35
1879.			
January.....	1,554,148 82	623,290 31	930,858 51
February.....	2,161,249 23	705,147 49	1,456,101 74
March.....	1,786,606 26	\$34,231 68	852,374 58
April.....	1,971,401 72	1,017,520 11	953,881 61
May.....	2,370,481 16	914,224 67	1,456,256 49
June.....	5,423,534 99	4,920,572 97	502,962 02
	22,570,791 48	9,227,473 69	*13,343,317 79
APPROPRIATIONS FOR 1879-1880.			
1879.			
July.....	1,176,599 41	10,816 89	1,165,782 52
August.....	1,421,309 72	480,319 89	940,989 83
September.....	1,749,604 33	241,676 62	1,507,927 71
October.....	1,422,890 66	362,626 93	1,060,263 73
	5,770,404 12	1,095,440 33	4,674,963 79

\* This is a statement by warrant and does not include the amount outstanding in the hands of disbursing officers June 30, 1879, which was \$283,725.99.

The total expenditures of the last fiscal year by warrant, after deducting the amount refunded, were \$36,403.70, nominally in excess of those of the previous year. As stated, however, the above table does not show the net amount chargeable to the Department, inasmuch as it does not include the balances in the hands of disbursing officers and not paid out before the close of the year. Besides this, also, a portion of the

amount shown by warrant was expended pursuant to appropriations made for specific objects and not estimated for by the Department. There were to cover deficiencies for previous years 1875, '76, and '77, which had been omitted, for materials furnished the Jeannette in fitting that vessel for her expedition to the North Polar Sea, and for other expenses not pertaining to the current operations of the Department. The total of these specific appropriations was \$212,392.30, which, deducted from the aggregate shown in the table, makes the aggregate expenditures as shown by warrant, for the fiscal year ending June 30, 1879, \$175,988.60 less than those for the previous year, and the actual amount, including that in the hands of disbursing officers, \$459,714.59 less than the expenditures of that year.

The appropriations available for the present fiscal year, commencing July 1, 1879, are \$14,502,250.67. The amount drawn by warrant from the treasury from July 1 to November 1, 1879, deducting that refunded, is \$1,674,963.79. The amount drawn by warrant during the same period of that year was \$4,669,563.39. This difference is more than accounted for by the fact that the disbursing officers hold in hand an excess of \$1,000,000 over the previous year.

## ESTIMATES.

The following table will show the estimates for the fiscal year ending June 30, 1881:

## ESTIMATES.

For the Navy .....	\$7,546,725 00
For civil establishment in navy-yards .....	196,199 50
For gunpowder and torpedo corps .....	270,000 00
For camp, and equipment .....	800,000 00
For navigation and navigation supplies .....	104,500 00
For hydrographic work .....	46,000 00
For Observatory, Nautical Almanac .....	44,800 00
For repair and preservation of vessels .....	1,500,000 00
For machinery, tools, &c. ....	800,000 00
For commissions for the Navy .....	1,282,125 00
For repairs of hospitals and laboratories .....	30,000 00
For Naval Department .....	45,000 00
For hospital fund .....	50,000 00
For contingent expenses of department and bureaus .....	236,000 00
For Academy .....	187,344 45
For staff of Marine Corps .....	851,145 00
For Asylum, Philadelphia .....	59,309 00
For maintenance of yards and docks .....	440,000 00
For repairs, &c., of navy-yards .....	375,000 00
	<hr/>
	14,864,147 95

This amount is \$361,897.28 in excess of the appropriations for the present year. In order, however, to ascertain the total difference between this estimate and the current estimates for the present year, the amount of specific appropriations not estimated for by the Department



for the next year but appropriated for the current fiscal year, should be added. These amount to \$208,281.72, which, added as above, will make \$570,179 as the total excess of the estimates for the next over the aggregate appropriations for the present year. This is made up as follows:

Pay of the Navy .....	\$303,450 00
Equipment and recruiting contingent .....	5,000 00
Provisions, Navy .....	257,125 00
Provisions and clothing, civil establishment .....	1,017 25
Civil establishment, yards and docks .....	4,900 00
Naval Academy .....	850 00
Quartermaster of Marine Corps .....	239 00
Steam machinery, civil establishment .....	292 75
	<hr/>
	572,864 00
Deduct excess of appropriation for pay of Marine Corps over and above the amount estimated for .....	2,685 00
	<hr/>
Total .....	570,179 00

Although the total excess thus shown is \$570,179, yet the actual amount, considered with reference to current ordinary expenditures is, as stated above, only \$361,897.28, which is thus accounted for:

The estimate for pay of the Navy made in my last annual report was \$7,350,000. This was ascertained by accurate calculation, taking the number of officers of all grades in the Navy and their pay as fixed by law, and the result was reached by the simple rule of addition. But Congress deemed it best to reduce the amount appropriated to \$7,243,275, or \$106,725 less than the estimate. This does not create a deficiency, inasmuch as pay of the Navy is necessarily a continuing appropriation; for the reason that it is the custom of paymasters of ships abroad to draw sixty and ninety day bills upon London, which cannot be regarded as disbursements until they are paid, and when they are drawn during the months of May and June cannot be taken into account until after the close of the fiscal year. The result is that it is impossible to strike a precise balance at the end of the year, of this particular fund, but the expenditure runs necessarily into the year in which the bills are paid. Consequently when the appropriation is short, it creates only a necessity for such an appropriation for any one year as will cover the shortage of the previous year. For example, if Congress had not cut down the estimate of the Department, the fund for the pay of the Navy would not have been short at the close of the last year; that is, there would have been money enough in the Treasury to have paid within the first quarter of the present year all the bills drawn during the sixty days preceding the close of the last year. But as the appropriation is a continuing one, all difficulty on this score will be overcome by adding the sum of \$106,725 to the appropriations of the present year, and the same amount to those of the next year, so as to prevent a like result then. These sums added make \$213,450. The remaining \$90,000 is the estimated amount made necessary for the next year by the system for training boys, that sum be-

ing considered sufficient for that purpose. This amount added to the \$213,450, makes a total of \$303,450, the amount of excess over the last appropriation for pay of the Navy, as above stated. The increased estimate of \$5,000 for the contingent fund of the Bureau of Equipment and Recruiting is rendered necessary by the increased expense of opening rendezvous in different parts of the country for the enlistment of boys, under the act of May 12, 1879, including transportation and the purchase of school-books.

The increase of \$257,125 on account of provisions is thus accounted for: At the last session of Congress the Department estimated for \$1,200,000 for provisions for the present year, but the appropriation made was only \$1,025,000, or \$175,000 less than the estimate. There has been thus far no deficiency on this account for the last year, but unless an appropriation shall be made to cover this amount for the next year there will in all probability then be one. As provisions bought for one year are not always consumed or issued until after the beginning of the next, especially where they are bought during the last quarter, the precise balances of the provision account, like that of pay of the Navy, cannot always be ascertained until after the beginning of another year. The remaining sum of \$82,125 is the estimated cost of provisions made necessary by the enlistment of 750 boys, authorized by the late act of Congress. These sums added make \$257,125, the whole amount of the increase. The \$1,017.25 is rendered necessary owing to the introduction of the system of manufacturing clothing which the Department has established at the Brooklyn navy-yard; the services of a writer or clerk are absolutely necessary in order that the accounts may be accurately kept. This sum is to cover his pay. The increased estimate on account of the Bureau of Yards and Docks is occasioned by a necessary increase to the civil establishment of that bureau, in this, there is one mail-messenger at each navy-yard, making seven in all, whose pay is fixed at \$700 per year. As this charge is properly against this bureau it has been deemed most appropriate to add the whole pay of \$4,900 to its civil establishment. It would not increase the aggregate expenditure of the Department, but is only designed to assign the employment and pay of these messengers to one bureau, which shall be held responsible. The increase in the civil establishment of the Bureau of Steam Engineering is thus accounted for: there is one clerk and one writer at the Boston navy-yard, who are now paid respectively \$1,300 and \$1,017.25, and both being of equal competency and performing labor alike, it is deemed expedient to equalize their pay by increasing that of the writer the amount asked for, that is, \$285.75. The difference of \$850 on account of the Naval Academy is thus accounted for: in the estimate an item of \$1,600 has been inserted for the pay of a dentist to attend the cadets, in lieu of an item of \$750 heretofore appropriated for the pay of an apothecary. The acting assistant surgeon, who has hitherto performed the duty of dentist, has been mustered out of the service in con-



formity with the act of Congress to abolish the volunteer navy. The amount of \$239 estimated for the quartermaster of the Marine Corps is made up of sundry items running through his estimates for the year commencing July 1, 1881, and is believed to be necessary to the service. The several items thus explained aggregate \$572,864, but in order to ascertain the aggregate of the excess, as explained above, there should be deducted \$2,685, which was the excess of the appropriations over the estimates for the present year. This leaves \$570,179 as the total excess over the appropriations of the current year, which this detailed statement is designed to explain.

#### NAVY PENSION FUND.

The following statement shows the number and yearly amount of pensions on the rolls June 30, 1879, and the amount paid during the fiscal year:

	On roll June 30, 1879.	Yearly value.	Amount paid for pensions.
Navy invalids .....	1,844	\$211,615 18	\$209,003 03
Navy widows and others .....	1,772	312,675 30	324,223 63
Total.....	3,616	524,290 48	533,226 66

#### "PAY OF THE NAVY" AND "SMALL STORES."

Upon my recommendation to the last Congress provision was made for the separation of "small stores" from "pay of the Navy," by the act of February 14, 1879, which established it as a separate fund. By the operation of this law the "small stores fund" was set aside as a distinct account, and thus a perpetual inroad upon "pay of the Navy" was cut off. Deficits in pay were expressed in losses upon issues of stores, as explained in my last annual report, as well as in the sales of condemned stores, which never bring the original cost, and also in losses outright by the casualties of shipwrecks. These unavoidable losses gradually depreciated the small stores fund; and in future they will be expressed in figures, as has never been the case before. The needs of the fund can now be shown from year to year, and Congress can take into consideration any demonstrated deficiency, where one exists, and make provision for the same understandingly by appropriation, as has been done from time to time for clothing for the Navy.

There is another source of deficiency in the appropriation for pay of the Navy, which has remained undiscovered and has made yearly drafts for a number of years upon the money provided solely for the pay of officers and enlisted men. I refer to the loss on exchange and the expenses of transportation of money to particular points for disbursement and its transfer between paymasters. It is a very plain proposition that, when an amount is appropriated just equal to the annual requirements

the disbursement of the fixed pay of the officers and men of the Navy, amount so provided can not be legitimately used for any other purpose, nor be diverted from these necessary expenses without creating a deficiency, which would show itself whenever another settlement should be made with pay, such as that of the year 1877. I should state that the charge to pay has always been covered up, because a large unpaid balance remains in the Treasury, arising from the amounts due officers at sea and the pay withheld from enlisted men. As one set of men are paid off and discharged another is enlisted; and therefore no opportunity arrives for completely closing the appropriation account, which, as I have elsewhere stated, must be continuous, from the nature of the engagements and three years' cruising.

Now, as exchange is charged to the appropriation and not to the officers and men, whose dues are never diminished by the exigencies of service in foreign countries, it is, of course, apparent that the appropriation must run short, and that the accumulation of such a charge for a series of years must eventually cause a deficiency. I am satisfied that there has been a serious charge against pay of the Navy, which has not been heretofore sufficiently accounted for. To remedy this I have caused the Treasury to be divested of this burden, and have made a separate estimate of the exchange and transportation of money, which I am sure will have a wholesome effect in preserving pay intact. The origin of this practice seems to have been coincident with the disbursements of the Navy, and it is calculated to excite surprise to find to what extent pay of the Navy has been drained on this account, although the United States, as a rule, pays less for exchange than private parties. On July 1, 1877, I commenced with a clean balance-sheet, as announced at the time, and in the next three years 1876, '77, '78, and '79 there has been paid a discount or loss on exchange approximating \$75,000. Where it has been practicable I have dispatched money by authorized disbursing-agents, and also by express, and in this way have saved to the government the ordinary expense when these agents have been employed, and a large portion of the money has been transmitted by express.

The necessity and convenience of exchange can never be abridged. In this respect the United States occupies the same footing with other nations, cities, and business houses, who are always represented upon the great commercial thoroughfares of the world. The expense of exchange must always be met, because, without it, disbursing-officers would be obliged to take abroad with them sufficient amounts of funds to cover all liabilities of ships in commission, in every detail of expenditures. The appropriations for the Navy would be soon drawn from the Treasury, and the available balances for current home expenditures would be scattered in every direction, entirely out of the control of the Department, until each disbursing-officer had returned home from his service and deposited his balance in hand in the Treasury.



## NAVAL ACADEMY.

The death of Commodore Foxhall A. Parker, since the date of my annual report, created a vacancy in the office of Superintendent of the Naval Academy. It occurred during the progress of the annual examination in June, and I was enabled, being present, to realize how admirably he had managed the institution. The affectionate regard shown for him by the cadets evidenced how completely he had won their esteem by firm yet gentle and kind management, and the universal sentiment of those with whom he had been officially associated evidenced not merely his peculiar fitness for the position, but the faithful and zealous manner in which he discharged his official duties. His successor, Rear-Admiral George B. Balch, has always borne so high a character in the Navy, and possesses such eminent qualities as a man, as to assure the Department that he will be equally successful, and I take great pleasure in saying that, thus far, he has met my expectations. Under his superintendency the present term is progressing under the most favorable auspices.

The prosperous and satisfactory condition of the institution is fully set forth in the accompanying report of the Board of Visitors. The gentlemen who composed that board were patient and thorough in their investigations, and the conclusions reached by them were not only commendatory of the general management by the former Superintendent and the officers and professors who compose the Academic Board, but of the conduct and deportment of the cadets. Recognizing the fact that in such an institution, where the number of cadets is so large and their temperaments and inclinations necessarily varied and conflicting, seemingly harsh and severe rules are required to preserve discipline, they, nevertheless, say "that, as a general thing, the cadets observe the rules and regulations of the institution with the same alacrity and delight as they would have those to do in after life who may be placed under them in their respective commands."

The training in seamanship, navigation, and gunnery is as satisfactory and complete as possible with the facilities at command. In the opinion of the board, however, the vessels now used are not sufficient for thorough practice in gunnery, and they therefore recommend that a steam-vessel of 500 or 700 tons be provided for that purpose. The Department would find much difficulty in carrying out this recommendation by the use of any vessel in commission or undergoing repair, in consequence of the necessity of employing them in other and different service, and consequently submits the recommendation of the Board of Visitors to the consideration of Congress. If no congressional direction shall be given upon the subject, it will avail itself of all the means at its command to carry out this recommendation with as little delay as possible. The cost of this method of practice would not be increased beyond the present expenditure, while it would undoubtedly tend to produce



improvement in the practice of firing, because it would require a shifting instead of a stationary target to be followed.

It gives me great pleasure to speak in commendatory terms of the Academic Board. Its members have been selected with reference to their peculiar qualifications for the positions they respectively occupy, and have thus far, collectively and individually, demonstrated the wisdom of their selection. Their distinguished professional and scientific attainments have enabled them to make a course of study at the Academy as thorough and complete as it is at any like institution in the world. The standard of professional education now reached by the young officers of the Navy who graduate at this institution will compare most favorably with that recognized by any of the governments, and assures a continued course of efficiency in the management of our ships, both in peace and war, and of a capacity on their part to deal properly with the difficult and delicate questions which frequently arise out of international relations and are often submitted to the decision of naval officers.

Since the introduction of steam in our war-vessels the Department has recognized the absolute necessity of establishing a standard of professional education in the science of steam-engineering of the very highest character. Not only is it important that the principles involved in the structure of steam-machinery should be theoretically acquired, but without practical knowledge of the building of engines and boilers and the best methods of their management at sea, it is impossible to provide security against the many accidents to which such machinery is subject. In these respects the degree of success has been eminently satisfactory. But in order that the department of steam-engineering may be enlarged in the circle of its operations and duties, the Board of Visitors recommend that cadet-engineers shall be furnished with tools and facilities, which shall include appliances for iron-boat-building "and for laying down the lines of vessels and designing the detailed parts of the same." Whether this method of uniting the two professions of steam-engineering and construction should be adopted, is a question which I hesitate to decide affirmatively for reasons which seem to me satisfactory. They are not necessarily associated, even in building iron vessels, inasmuch as one involves the building and working of marine-engines, boilers, and machinery, and the other the lines and plans of vessels with reference to their tonnage, displacement, sailing capacity, and entire structure, no matter whether they be of wood or iron. The mere working in iron and other metals does not necessarily make a steam-engineer a naval constructor, any more than does the working in wood make a naval constructor a house-carpenter. At present, therefore, these two branches of service are separate and distinct, except that under the law as it now stands authority is given to appoint, as an assistant constructor, a graduated cadet-engineer, who shall, in the opinion of the academic board, have exhibited peculiar fitness for that pursuit. This might be done without any necessary conflict, but is attended with

this practical difficulty: that as the professors of steam-engineering are not educated as naval constructors, it imposes upon them the decision of matters not properly pertaining to their profession, and might place the cadet-engineer in the position of having to acquire a profession different from the one in which he had graduated. He might or might not make a good constructor, for it does not necessarily follow that the most ingenious builder of machinery is, in all respects, qualified to become a competent constructor of vessels of war. In all the European governments the two professions are recognized as entirely distinct, and in England naval constructors are specially educated in certain professional branches pertaining to the structure of ships, while those branches in which steam-engineers are especially educated are of a character wholly different. This policy is deemed preferable, as more consistent with the best interests of the service, and therefore I repeat the recommendation heretofore made by me, that Congress shall authorize the admission of a sufficient number of cadet constructors annually, as it has already done of cadet-engineers, so that after graduation they may have entire charge of that branch of the service. There is as much necessity for the one as the other. Chief constructors, at present, are taken from assistant constructors by promotion, while the department is left to select the latter from such ship-carpenters and others as may be recommended to it, and who may be supposed to have sufficient genius and talents to make chief constructors. Good and fortunate selections cannot be always assured so long as this practice prevails; and it is not desirable that it should remain a part of the permanent establishment of the Navy. The law confides to the Secretary discretionary power to make assistant constructors out of cadet-engineers, but I have declined to exercise this discretion, mainly for the above reasons. Two of these cadet engineers, however, have, with my approbation, recently entered the Royal College at Woolwich, in England, where they are pursuing a course of study as constructors, with such facilities as are furnished in the government dock-yards. The authorities of Great Britain admitted them, with great liberality, without the accustomed examination, and kindly accepted their graduating certificates obtained at the Naval Academy as sufficient evidence of their qualifications. They are young men of fine promise; and it is confidently expected they will return, after finishing their course, qualified to take any position connected with the construction of vessels. In the mean time, it is very desirable that Congress shall authorize such steps to be taken as shall recognize the necessity of having a corps of educated constructors graduated at the Academy, in order to provide for the future wants of the Navy.

Authority is given by existing laws for the education of midshipmen and others as naval constructors or steam-engineers, provided they show a peculiar aptitude therefor. This is left discretionary with the Secretary. By the same law he is allowed to form a separate class of cadet-

neers, and otherwise afford them all proper facilities for such a scientific mechanical education as will fit them for steam-engineers or constructors. In the further provisions of the law, however, a practical distinction is made between steam-engineers and constructors in this, the Secretary is authorized to appoint cadet-engineers to the number of twenty-five each year, but is not authorized to appoint cadet-constructors. This distinction is practically embarrassing. In the first place, when cadet-midshipmen are appointed from Congressional districts they enter the service with the hope and expectation of becoming officers of the line, all the grades and titles of which are open before them. And thus entering, there is no authority given to compel them, in the mere discretion of the Secretary, to change the whole course of their professional lives by making naval constructors out of them, and thereby take them away from the line and attach them to the staff. Nor would it be advisable to confer such authority upon the Secretary, because in many instances it might occur that cadet-midshipmen would alter the course upon which they had entered, while the interest of the service, as viewed by the Secretary, might require them to adopt another; and to force them against their will to make this change would not only be violative of the spirit, if not the letter, of the law which authorizes their appointment, but manifestly unjust to them. In the second place, cadet-engineers are appointed as such, and not as cadet-constructors; and they are required, like cadet-midshipmen, to serve two years' service on naval steamers. Consequently, to divert them from the studies peculiar to this profession and turn them into another and different profession would be, in many cases, as unjust to them as to the cadet-midshipmen.

That the proper remedy may be furnished and the whole difficulty overcome if Congress will authorize the annual appointment of such number of cadet-constructors as may be deemed necessary to be educated as such. This will be simply to place cadet-engineers and cadet-constructors upon the same footing. Then each class will pursue the course of study adapted to its profession, and we may reasonably expect to realize within a few years the benefits of having well and thoroughly educated constructors as well as engineers in distinct professions. We should then look to the former as other nations do—to lay down the lines to regulate the tonnage, displacement, and sailing qualities of our ships of war, and to the latter to furnish them with such engines, boilers, and machinery as will give them additional speed and secure perfect safety to them at sea.

I respectfully call the attention of Congress to the recommendations of the Board of Visitors in reference to the erection of new buildings and other improvements which they consider absolutely necessary. These are, a wing to the rear of the new building erected for cadet headquarters, a separate building for laundries, a new armory in place of a wooden shed now occupied for that purpose, and a new building for the



marine barracks. These improvements are not estimated for, but they are deemed of great importance to the institution, and I unite with the board in recommending them to the favorable consideration of Congress. Approximate estimates of their cost can be readily obtained.

#### NAVY-YARDS.

The work done during the year at the several navy-yards will appear in detail, in the accompanying report of the Bureau of Yards and Docks. It has been regulated by the condition of the yards and the amount of the appropriations for that purpose. Although larger amounts of money might in all probability have been judiciously expended upon several of the yards, yet it has been the object of the Department to apply the amount at its disposal in the direction indicated in the estimates upon which the appropriations were based and with reference to immediate wants. The report of the bureau will show the nature of the work done at each yard, consisting of yard improvements, repairs and preservation, general maintenance, civil establishment, and contingent expenses. It was not deemed advisable to begin any new work or to make extensive repairs, for the reason that no special appropriations were made for that purpose. To have done so without such appropriations, indicating their approval, might have subjected the government to the possible loss of the money so expended, in the event of subsequent appropriations being withheld. Although the Department may possess the discretionary power to apply the general appropriations in this way, it is considered by me to be a safer and better course to await the more direct appropriation of Congress.

**KITTERY YARD.**—The dry dock was found in such condition as to require thorough repair. Being one of the most valuable belonging to the government and at one of the most important yards, this was done, but the work was so conducted as not to interfere with its use when needed. The total expenditure was \$67,011.23.

**CHARLESTOWN YARD.**—A special appropriation for repairing the rope-walk has been expended, and it has, in consequence, become one of the most valuable establishments of the kind in this country, if not in the world. It possesses the capacity to supply all the rope needed by the Navy, and of the best quality. Several small wooden buildings which were exposed to fires have been removed, but there are others in like condition which should be removed hereafter, as, in the event of fire, they would endanger the more valuable buildings. The great importance of this yard renders it necessary that it should be always kept in good condition. The caisson of the dry-dock is in a partially decayed condition, and in danger of becoming entirely unfit for use if not repaired. The caisson has been in use for nearly fifty years, and it would be bad economy to leave it to further decay. The total expenditure has been \$106,333.62.

**NEW LONDON YARD.**—The limited appropriations heretofore made have rendered it impossible to put this yard in a condition for general use. Having only a wharf and storehouse, and with only a single building suitable for residence, it cannot be used for either construction or repair. The harbor is very fine and admirably protected, and in reference to both it and the yard I can only invite attention to what was contained in my last annual report. The expenditures have been limited to actual necessity, and have been confined to a few repairs. The total amount was \$7,442.38.

**BROOKLYN YARD.**—What I have heretofore said of this yard may be repeated with great propriety. It remains in admirable condition. The annual expenditures are made with the view of preventing its deterioration and continuing its general improvement. The money expended there has been applied with both economy and propriety. The total expenditure was \$125,816.19.

**LEAGUE ISLAND YARD.**—This yard was greatly damaged by a severe storm during the year. About 1,400 feet of the dike was washed away and nearly the entire island was submerged to the depth of from 3 to 7 feet. Considerable material was swept away. This had, necessarily, to be repaired out of the general fund, as there was no other applicable to that purpose. With all the means at the disposal of the Department, it has only been able to make repairs of a temporary character. The yard will be left subject to great future injury unless they are made permanent. The total expenditure was \$121,840.26.

**WASHINGTON YARD.**—The value and importance of this yard has, in no sense, diminished. Its manufacturing facilities have steadily increased. The rolling-mill, erected a little over a year ago, has proved a complete success, and has already saved to the government more than its cost. The public interest requires that its boundaries should be somewhat enlarged, and I approve the recommendation of the Bureau of Yards and Docks in reference thereto. The yard has been kept in excellent condition, and the expenditures have been made most judiciously and with commendable economy.

The necessity for improving the East branch of the Potomac river has become absolute. If it is not done access to this yard may, in a short time, become impossible, except with vessels of very light draught. The mud and sand washed in from the adjacent high-grounds is rapidly filling up the channel, so that vessels are now frequently grounded in attempting to reach the yard. Appropriations heretofore made have contemplated the improvement of the Potomac from Georgetown to Alexandria, and have had no reference to the East branch. The longer they are delayed the greater will become the difficulty of opening the channel, and good economy would seem to require that it should be done immediately. The total expenditure was \$90,184.42.

**NORFOLK YARD.**—The buildings, wharves, and roadways at this yard suffered great injury in August last in consequence of a violent storm.



The repair of these required an extra expenditure, and, so far as it has progressed, the money has been judiciously expended. In a short time it is believed that the yard will be again put in good condition. This is a most important and valuable yard. The harbor is one of the best upon the Atlantic coast, and the climate is such that work can be done during the whole year. Without the re-erection of timber-sheds, the valuable timber now on hand will be subject to great decrease in value from exposure to the weather. The total expenditure was \$108,648.71.

**PENSACOLA YARD.**—I desire to call attention to what was said in reference to this yard in my last annual report. As it stands alone upon the Gulf, and has such large quantities of live-oak timber adjacent to it, there is every reason why it should be no longer neglected. During the year nothing was done except what was necessary to its preservation. The section-dock heretofore authorized by Congress, and built at Chester, Pa., has been so far advanced that two sections of it were transported to the yard during the last summer. They escaped all the perils of the sea, and are now ready to be put in use, as originally contemplated, when the remaining sections are finished. The total expenditure was \$52,731.07.

**MARE ISLAND YARD.**—The special appropriation of \$75,000 for the dry-dock has been expended, and the work has progressed most satisfactorily. The entrance to it is now protected by a coffer-dam, which is liable at all times to give way, and the work should be pressed forward as rapidly as possible to a point where better protection shall be secured. The great importance of this yard commends it to the special consideration of Congress. It being the only one upon our Pacific coast, it is the exclusive representative of the Department in repairing vessels attached to the Asiatic and Pacific squadrons. Consequently it should be put and kept in thorough condition. Up to the present time as much has been done in that direction as could possibly be done with the money allowed. The total expenditure has been \$185,712.98.

**SACKET'S HARBOR.**—At this station the government owns a ship house, in which there is the frame of a line-of-battle ship, which has been lying there a great many years, and is rapidly decaying. Although a portion of the building has been injured by a gale of wind, yet it has not been advisable to repair it, inasmuch as neither it nor the frame of the ship is considered by the Department as having any actual value. It is hoped that Congress will direct the disposition of this property. The sum expended in taking care of it was \$916.72.

**KEY WEST.**—Nothing more could be done at this station than to make some slight repairs to the buildings and shops and to renew the wharf. This place is frequently visited by our vessels, and the interests of the service requires that it should be ready at all times to furnish them with necessary assistance. The total expenditure was \$6,999.31.

**NAVAL ASYLUM.**—At the close of the last fiscal year there were 167 beneficiaries at this institution. Their condition is rendered as comfortable as possible at a total expense of \$50,259.32.

## THE TRAINING SYSTEM.

the importance of the system which authorizes the training of boys seamen cannot be over-estimated. Thus far it promises complete success, and if persevered in will undoubtedly supply the Navy with a supply of men to whom our ships may be safely intrusted while at sea, upon whose courage and patriotism the country may confidently rely in time of war. No nation can safely intrust the keeping of its ships to those who do not feel that they owe undivided allegiance to it, as the Navy has borne so conspicuous a part heretofore, and will undoubtedly bear an equally conspicuous part hereafter, in every measure required to preserve our national honor, all the means necessary to secure it thoroughly American should be encouraged. The British navy has the reputation of being unsurpassed in its *personnel*, and as it has acquired this distinction mainly by means of its training system, we may be reasonably assured that by a proper development of our own system we may obtain a like result.

At the time of the passage of the act of May 12, 1879, there were 945 boys enlisted and serving as apprentices. These were enlisted under a previous general law, which made it discretionary with the Department, greatly restricted the exercise of this authority by considering the apprentices as part of the 7,500 seamen authorized for the service. The present act, however, authorizes the enlistment of 750 boys in addition to the previous force, which increases the whole number of seamen to 8,250.

Soon after the passage of this act measures were taken to extend facilities for these enlistments into the interior of the country, as far west as south as the States bordering on the Mississippi river, and as far northwest as the States bordering upon the lakes, while, at the same time, recruiting was continued in the seaboard States. The result has been more favorable than was anticipated, and 420 boys have been enlisted since the passage of the law, who for sprightliness, vigor, and robust constitutions are unsurpassed by any other like number of the same age in the country. These added to those previously in the service make the total number 1,365, nearly one-seventh of the whole body of seamen. Of this number, however, 625 of former enlistments have been detailed for sea-service on board of several of our cruisers, and the Department has great satisfaction in being able to say that, in every instance where they have been detailed for that purpose, their conduct has been universally good as to elicit the warmest praise from all the officers in command of them. Several officers have specially commended them. Recent personal intercourse with the greater part of these boys has convinced me that they, with very few exceptions, are ambitious to distinguish themselves in the service. Many of them possess a high degree of intelligence, and the education of all in an elementary course of learning is carefully looked after. As they mainly represent the industrial

classes, and promise to be of much value to the naval service, it is worthy of consideration whether it is not desirable to adopt some line of policy towards them which shall excite a proper spirit of emulation in their ranks. This may be done by authorizing medals of honor to be conferred upon those who shall show themselves to be most meritorious. Something like this would tend very greatly towards elevating the moral standard of the service, and stimulate them to put forth their best energies.

Complaints have reached the Department from some of these boys and their parents of the unsuitable character of the Navy ration as food. It is quite natural that these complaints should be made, for it is scarcely to be expected that boys between the ages of fifteen and eighteen, who have been accustomed to home comforts and diet, will be immediately reconciled to food prepared for older and hardier seamen. But the Department has no discretion on this subject, as the constituent parts of the Navy ration are regulated by law, and no substitution is allowed except in the cases of senior officers in command, and the mere exchange of coffee and sugar for the extract of coffee combined with milk and sugar. It is recommended that discretionary power be given to change the rations for boys so as to make them more suitable to their ages and condition.

No good reason is perceived why these apprentice boys should not be allowed their clothing without charge. At present the price has to be deducted from their pay, while all the soldiers in the Army are supplied with clothing without cost to themselves. The expense is trifling compared with the injustice of such discrimination, and I respectfully recommend that this inequality shall be removed. Strict justice requires that all seamen, in this respect, shall be placed upon the same footing with soldiers; but, at all events, that the apprentice boys should be exempt from this charge, which the most, if not all, of them are ill able to bear.

#### SANITARY REGULATIONS.

Not alone with reference to naval vessels, but to those belonging to the mercantile marine, has it always been considered of the highest importance that proper precautions should be taken to secure healthfulness to their crews. As they visit the various ports of the world, they may, if in an unhealthy condition, carry along with them the worst forms of contagious diseases, and thus scatter pestilence and death, in the most infectious forms, throughout districts otherwise exempt from them. There is no convincing evidence that the yellow fever has been produced in the United States by any local causes in those cities and sections where it has hitherto prevailed. The facts furnished by the experience of former years, when it existed only in seaport cities, would seem to warrant the conclusion that it must have been imported by vessels from abroad, bringing it from those tropical regions where it had been generated among populations exposed to the influences of a warm climate.



and where sanitary precautions were unknown. Whether the recent prevalence of this disease in the interior of the country has furnished any facts in disproof of this theory, scientific research can alone determine. And as science, in the solution of this important problem, is the representative of the whole country as well as of humanity, whatsoever done in that direction is of national importance. If the assumption that the disease is not indigenous shall be found to be true, then our attention must be turned in the direction of endeavoring to adopt such sanitary and precautionary measures as shall prevent its introduction in the future. And if, on the other hand, it shall be ascertained that its germ has been deposited and left in a torpid state during the winter to be developed into activity during the summer months, then it will become still more important that some method for its destruction shall be discovered.

Little success has been attained, up to the present time, in demonstrating that epidemic diseases have a germ origin. Recent scientific research at Rome has given rise to the belief that the malarial poison in the Pontine marshes exists in minute animalculæ, which float about unperceived in the air and water, and are susceptible, under proper conditions, of infinite distribution. The investigations leading to this discovery were conducted with the utmost care and precision, and whether the conclusions reached shall be finally adopted or not by the scientific world, they have opened a field for further experimental research. And in the end, it shall be ascertained that the yellow-fever germ actually exists, a way may then be opened for the introduction of efficient means of preventing the disease altogether, or at least of restricting its dissemination.

When this disease made its appearance on board the United States steamer *Plymouth*, in the summer of 1877, it was not attended with such fatality as to create any unusual degree of alarm. The skillful attention of the naval medical officers was sufficient to assure control over it, and the number of deaths was comparatively few. The ship, however, was subjected to thorough fumigation in the most approved modes, besides being exposed to the lowest degree of cold that could be reached in an exposed condition in latitude 44° north. But the utmost care was not sufficient to prevent the disease from making its appearance again in the summer of 1878, when the ship was returned to a tropical climate. In the case of the United States steamer *Susquehanna*, some years before, the experience was substantially the same. Consequently the *Plymouth*, like the *Susquehanna*, was put out of commission, stripped of all her equipment, and yet remains in a proper condition for such further experiments as may become necessary. It is hoped that, as the disease did not reappear on the *Susquehanna* after the second winter, a like result may be produced with the *Plymouth*; but, in the mean time, the Department continues to employ, through its medical officers, all possible diligence in investi-

gating the causes of the disease, the various and most approved methods of preventing its introduction, and the best means of purifying the atmosphere of ships by ventilation. With the means now at its disposal, these investigations must necessarily be more limited than is desirable, but they will be carried as far as possible. And if it shall be the pleasure of Congress to adopt the suggestion contained in the accompanying report of the Bureau of Medicine and Surgery, and authorize the establishment of a station on our coast where infected vessels may be sent and experiments made to discover the best and surest methods of disinfection, the results reasonably to be expected would without doubt be more satisfactory. These are important and valuable suggestions; and although the amount necessary to put them in practice has not been estimated for by me, inasmuch as it does not constitute a necessary part of the current expenditure, yet, in my opinion, the same amount of money could not otherwise be better, if so well, expended. I therefore recommend the adoption of the proposed plan, and do so the more readily because the trained experience and abilities of the medical officers of the Navy, the knowledge acquired by them in witnessing the effects produced by climatic influences, and their familiarity with the various conditions of the atmosphere in the several parts of ships, peculiarly fit them for this important work.

When an epidemic is prevailing very little time is afforded to the medical attendants for scientific investigation into the causes which produced it. Those to whom this work should be confided ought not only to be specially fitted for it by scientific training, but be freed from the care and responsibility of the sick, while at the same time they should have access to sick-rooms in order to make atmospheric observations, both with a view of ascertaining whether any organic germs existed and to mark the effects of fumigation.

The Department assigned medical officers of the Navy to duty at Memphis and the West Indies, who acted under the general direction of the National Board of Health. They rendered important services and gained valuable knowledge. It is desirable to utilize this experience and to prepare a greater number of these officers for the investigations above stated; and no better school for this purpose could be established than the station recommended by the bureau, at some point upon the coast where our ships of war could immediately resort for disinfection in case of epidemics of yellow fever breaking out. The ships could be made ready for sea again with but little delay, and in time of war the advantages of such a resort would be incalculable.

As the means at the disposal of the Department have necessarily limited the experiments thus far, investigations have been confined mainly to observations on shipboard, at shore stations, and in foreign ports, with a view to decide the relative merits of the various modes of artificial ventilation. It is necessary to health that the air should be kept in motion in all parts of a ship, whether stationary or afloat, and



rious contrivances for this purpose have been invented. Some of answer the purpose reasonably well when a ship is moving, while produce no perceptible effect while she lies at anchor, when foul air ly accumulates. Desirous of ascertaining the best of these methods, Department, during the last year, while the United States steamer mond was undergoing repair, introduced a plan on board that l, which, after investigation, seemed to promise the most favorable ts. Complete ventilation has been obtained by it, and it is believed the Richmond is now the best ventilated ship of war in our Navy, t in the world. During her recent voyage from New York to ghai, the temperature of her berth-deck varied from 67° to 80° enheit, and of her spar-deck from 48° to 84°, so that the temperature e air on both decks is about the same. Besides this method of lation, however, large quadrangular air-ponts have been introduced ace of the small round ones so common in our ships, and these have ibuted greatly to the admission of fresh air. The two causes com l have produced the most gratifying results and have materially ished the sick-list. Although it would seem that the value of such tilator as that now upon the Richmond could scarcely be esti- d, yet it is considered too costly to be introduced upon all our ships rgoing repairs without increased appropriations for that purpose. stigations will be continued, however, with the view of ascertaining her it cannot be more economically constructed, and it is hoped among the great variety of plans some suitable one may be found, at it may be introduced into general use, not alone in the Navy, lso among merchant vessels, where ventilation is so much needed event injury to their cargoes.

#### THE RULES OF THE SEA.

e law as it now stands prescribes a set of rules for the navigation ssels, which are designed to prevent collisions at sea and on inland rs. It is believed that they embody, in their general features, what ome to be known as the laws of the sea, and furnish, in the main, nable security against collisions. But in their administration some ical difficulties have arisen which deserve Congressional attention. e ocean highway being free and all vessels being equally liable to ccident of collision, the most perfect understanding and unanimity cessary in formulating rules for the guidance of vessels meeting and ng upon the sea or navigable rivers and bays. It is desirable that unanimity should be international, certainly in so far as the naviga- of the sea is concerned, that is, that it should be attained by simi- aws enacted by all the maritime nations. General laws of this e would serve as the basis for subordinate and separate national ation. But inasmuch as no such unanimity has been secured by ational arrangements between the United States and other gov-

ernments, it is, in every sense, important that we should secure it in our own.

The mariners of all nations are separated into two completely independent divisions—the navy and the merchant marines. In every nation these two divisions are subjected to entirely independent control, so far as the exclusive interest of each service is concerned. But in all the nations, except the United States, both the naval and mercantile marine are affected by some mutual system of rules, governing both divisions. Here no mutual action has been secured, and if ever attempted it was a failure. Some means of making it a success should be adopted, and the subject is important enough to invoke the careful scrutiny of Congress.

The Secretary of the Navy is empowered by law to make rules for the guidance of naval vessels, but is not bound to consider the necessities or conveniences of the merchant marine, or to communicate these rules to merchant captains. The Board of Supervising Inspectors are empowered to make rules for the guidance of merchant vessels, but naval vessels are exempt from following them, and are not required to be notified of them. Foreign vessels are, by statute, exempted from both the naval and merchant rules, and follow only those of their own nations. Coast-Survey and light-house vessels are under the control of the Treasury Department, but are officered by naval officers, and have no rules for their special guidance except such as they elect to follow. Such an anomalous condition of things ought not to exist, and frequent collisions at sea may be expected while it does exist.

The rules issued some years ago by the Navy Department were exclusively designed for the guidance of naval vessels, and were prescribed without any reference to the special needs of the merchant service. The statute of 1877, with regard to the rules of the sea, was prepared without reference to the special necessities of the Navy, and naval officers have been left to discover, as opportunity offered, the differences between it and the former laws upon which the naval rules were based. As the inevitable result of this want of unanimity, both the rules governing the Navy and those governing the merchant marine are, in some respects, faulty, and their instructions in several points are supposed to be in direct conflict.

It is understood that new rules have been submitted by the English Government to the United States, which may invite legislation. They have not been submitted for the examination of the Navy Department, and if they have been to the Board of Supervising Inspectors, no notice thereof has reached the Department. The presentation of them, however, makes the occasion a proper one for an effort to secure international unanimity if possible, and if not, for securing harmony in our own system. It is undoubtedly true that some method of joint action between the controlling authorities of the naval and merchant service is absolutely necessary wherever the interests of both kinds of service become

tical. This object would, in all probability, be accomplished by the organization of a board representing the Navy, the Board of Supervisors, and the revenue service, to whom should be intrusted the decision of all questions in which the whole marine service is alike interested. The suggestion of this method is only made with a view to inquiry and whatsoever legislation Congress shall deem expedient.

#### OBSERVATORY.

The accompanying report of the Superintendent of the Naval Observatory will show that it has not lost any of its claims to the public favor. Its services to the cause of science are of incalculable value, and, as it has already reached the front rank among the kindred institutions of the world, the question whether or not it shall receive additional favors from the government does not seem to be debatable. I desire to call special attention to that part of the report of the Superintendent which has relation to the malarious influences to which the present site of the observatory is subject, and to add my own to his commendation for the purchase of a new site. It is very desirable that this should be done without delay, not only on account of health, but because economy requires that the purchase should be made before there shall be a large increase in the value of real estate, which seems probable in the near future. There are 1,075,865 cubic yards of earth on the grounds upon which the buildings stand, which can be removed, in order to make the lots correspond with the grades of the city streets and to give a proper grade to the river front. The removal of so large a quantity of earth will contribute materially to filling up a large number of lots in the adjacent river flats.

#### MISCELLANEOUS.

No new ships have been commenced since those authorized by the act of March 3, 1873, but some of those previously built have undergone so extensive repairs as to make them comparatively new in all respects except their frames, and in the cases of the Quinnebaug, Nipsic, and Galena, they may be considered as entirely new. Where the frames are of live-oak they have shown very little sign of decay, even after twenty-five or thirty years of service. Consequently, in the construction of ships of war we are, in some degree, behind the European maritime powers, although some of our vessels, as the Trenton, Marion, Vandalia, Matara, Quinnebaug, Galena, Essex, Enterprise, Adams, Alliance, and Nipsic, are such fast sailers and good sea boats as to compare favorably with the best foreign vessels of war of their classes. The largest part of our Navy, however, is composed of vessels of the old types, and while some of them possess excellent qualities, and are equal to any in the world of the same types, yet the Navy, as a whole, cannot be brought up to the modern standard of naval architecture until we shall



avail ourselves of existing improvements. We do not need so large a navy as the great maritime powers of Europe. They are crowded so closely together, and are so perpetually engaged in contests for supremacy, that strong navies are as essential to them as immense armies. Hence they expend large sums of money in experiments, in order to add to the efficiency of their vessels of war, not only as regards their speed but their qualities of attack and defense. While, therefore, we have adhered to the old types of vessels, they have introduced new ones, supposed to combine these qualities in a greater degree than has hitherto been reached. But whether in these respects they have surpassed us, and if so to what degree, remains an open question.

We cannot dispense with a navy, whether it be regarded with reference to defense or in its relations to our commerce. None of the nations are in a condition to do without strong armaments at sea, any more than to do away with preparations for defense on land. Our position does not exempt us from the necessities common to them all, but rather demands of us, in view of our rapid growth and increasing importance, that we should promptly recognize and act with reference to them. The most of the vessels of war of the European powers are, like our own, of the old types, and not superior to those of our Navy. Those only of recent construction are of improved types, and of these we can avail ourselves in the future improvement of the Navy, as they have heretofore done of improvements made by us. With the view of ultimately securing a combination of these advantages with such others as we possess ourselves, I directed the Bureau of Construction and Repair, more than a year ago, to direct the attention of our naval constructors to the necessity of laying down the lines and preparing plans for new ships of war, with reference to the best modern improvements. Some of these have been already furnished to the Department, and others are in such an advanced condition that they can be made ready whenever Congress shall deem it advisable to authorize new vessels to be built. In the mean time, the preparation of these plans furnishes a favorable opportunity to our naval constructors to improve themselves in the science of their profession. It excites a generous and commendable emulation amongst them, which cannot fail to result in benefit to the government, by securing such types of vessels, when new ones shall be built, as shall compare favorably with those of any of the modern nations. It is not believed that any people in the world possess a higher degree of mechanical genius than ours.

Apart from the question of the plan and type of ships of war is that of the material out of which they shall be built, whether of wood, iron, or steel. For unarmored ships wood is unquestionably superior to iron or steel. A heavy shot striking near the water-line of an iron ship and going through both sides would cause such damage, particularly in the side where passing out, that it would be impossible to stop the water, and would probably result in sinking the ship. A wooden ship perfo-

in the same manner could be far more readily kept afloat, the advantages of water-tight compartments being the same in both vessels. The great cause of complaint and dissatisfaction with wooden ships arises from their early decay, resulting from a law of nature never yet fully overcome. Many unsuccessful efforts have been made to do so, but thus far practical tests have not demonstrated the thorough efficacy of any of them. I have caused a process of preservation to be applied to a quantity of timber at the Boston navy-yard, which promises satisfactory results, at least to the extent of greatly increasing its durability. It will, however, require a period of time sufficiently long to compare it with timber in its natural state, in order to ascertain its value. If by this or any other method it shall be satisfactorily shown that the natural decay of white-oak and yellow-pine timber can be arrested so as to give them something like the durability of live-oak, it does not seem probable that wooden ships of war will be abandoned for vessels of either iron or steel. And if they shall not be, then the immense quantity of timber in our country will be useful in the future, as it has been in the past, in the construction of our unarmored ships of war.

Although immense sums of money have been spent by European governments in the construction of heavily armed and armored iron ships of war, it has by no means been proved that the plans of these ships are superior to the plans of our monitors. The armament and armor are undoubtedly superior, and the contest for supremacy between ordnance and armor is still going on. There is no reason now apparent for supposing that our type of iron-clads, when armed and armored in accordance with the ideas now prevailing, will be inferior to those of foreign governments. On the contrary, there is much reason for believing they will prove to be superior.

There have been no extensive purchases of timber during the past year. Only that required for special purposes has been obtained. There is on hand at the several yards, January 1, 1878, of live-oak 1,664,988 cubic feet, and of white oak and yellow pine 1,569,112 cubic feet. If all the timber shall prove to be of as good quality as was called for by the contracts under which it was purchased, it would be sufficient to build a number of ships of the Alaska class; and, consequently, with this large stock on hand, it will not be necessary to make any further immediate purchases, except for special purposes, unless Congress shall authorize new ships to be built. In this event, it will be desirable to increase the stock on hand to the extent of providing well-seasoned timber for future use.

In my last annual report I expressed the views entertained by the Department in relation to the double-turreted monitors now in progress of construction, and which were commenced under the act of June 23, 1864. I can only repeat what I then said, adding that these vessels necessarily deteriorate in value by delay in their completion, and that when completed it is believed they will be unsurpassed by any similar



vessels of war in the world. They will add very materially to our defensive force necessary to guard the entrances to our harbors and protect the cities of our Atlantic seaboard. The Department has not felt at liberty to apply any of the current appropriations to work on these monitors. That portion subject to expenditure by the Bureaus of Construction and Repair and Steam Engineering has been used in making the necessary repairs to vessels, engines, and boilers, and in building new boilers and casting new propellers. Repairs have been made upon 76 vessels, being small upon some and necessarily large upon others. There were 10 engines, boilers, and dependent machinery thoroughly repaired, 16 new boilers built, and 3 new screw propellers cast. The whole of this work has been well and satisfactorily done, and the details of it will be found fully set forth in the reports of these two bureaus. Such also is the case in reference to the entire operations of the Department, the business of each branch of the service being explained in the reports of the several bureaus. Taken together they show that the interest of the government is carefully guarded and that of the service promoted. But for the general and cheerful co-operation of the officers of the Navy neither of these objects could be accomplished.

R. W. THOMPSON,  
*Secretary of the Navy.*

The PRESIDENT.

# PAPERS

ACCOMPANYING

## THE REPORT OF THE SECRETARY OF THE NAVY.

### APPENDIX.

#### No. 1.—ESTIMATES, SECRETARY'S OFFICE.

*Estimates of appropriations required for the service of the fiscal year ending June 30, 1881, by the Navy Department.*

Detailed objects of expenditure, and explanations.	Estimated amount which will be required for each detailed object of expenditure.	Amount appropriated for the current fiscal year ending June 30, 1880.
<b>SALARIES.</b>		
Secretary of the Navy, per act June 21, 1879.....	\$8,000 00	
Chief clerk, per act June 21, 1879.....	2,500 00	
Disbursing clerk, per act June 21, 1879.....	2,000 00	
Four clerks of class four, per act June 21, 1879.....	7,200 00	
Two clerks of class three, per act June 21, 1879.....	3,200 00	
One stenographer, per act June 21, 1879.....	1,600 00	
One clerk of class two, per act June 21, 1879.....	1,400 00	
Four clerks of class one, per act June 21, 1879.....	4,800 00	
Three clerks, at \$1,000 each, per act June 21, 1879.....	3,000 00	
Two messengers, at \$840 each, per act June 21, 1879.....	1,680 00	
Two laborers, at \$660 each, per act June 21, 1879.....	1,320 00	
	36,700 00	\$36,700 00
<b>CONTINGENT.</b>		
Stationery, furniture, newspapers, and miscellaneous items, per act June 21, 1879.....	10,000 00	2,500 00
<b>SALARIES, BUILDING.</b>		
Superintendent, per act June 21, 1879.....	250 00	
One engineer, per act June 21, 1879.....	1,200 00	
One assistant engineer, per act June 21, 1879.....	1,000 00	
One conductor of elevator, per act June 21, 1879.....	720 00	
Three firemen, at \$720 each, per act June 21, 1879.....	2,160 00	
One fireman, at \$720 (submitted).....	720 00	
Five watchmen, at \$720 each, per act June 21, 1879.....	6,480 00	
Four laborers, at \$660 each, per act June 21, 1879.....	2,640 00	
Eight charwomen, at \$180 each, per act June 21, 1879.....	1,440 00	
Six charwomen, at \$180 each (submitted).....	1,080 00	
	17,690 00	15,890 00
<b>CONTINGENT.</b>		
Accidental labor, fuel, light, and miscellaneous items, per act June 21, 1879.....	10,000 00	7,000 00
<b>PAY OF THE NAVY.</b>		
Officers on sea duty, officers on shore or other duty, officers on waiting orders, officers on retired list, secretaries, clerks, extra pay to enlisted men, officers in excess of present list, and changes of duty, &c.; pay of petty officers, seamen, ordinary seamen, landsmen and boys, including men in the engineer force; and for the Coast Survey service, 7,500 men, and 750 boys, at the pay prescribed by law (It. S., p. 265, sec. 1536; p. 269, sec. 1569; p. 272, sec. 1595; per act February 14, 1879, (20 Stat. L., p. 284, sec. 1; per act May 12, 1879, 21 Stat. L., p. 3, sec. 1).....	7,271,725 00	
For exchange, mileage, and transportation of funds.....	275,000 00	
	7,546,725 00	7,243,275 00
<p>NOTE.—The estimate for the above purpose for the current fiscal year was \$2,400,000, being for 7,500 men, at an average pay of \$320 per man, though but \$2,300,000 was appropriated. The estimate for the next fiscal year is increased \$90,000, being for pay of 750 boys authorized to be enlisted by act of May 12, 1879.</p>		

*Estimates of appropriations required for the service, &c.—Continued.*

Detailed objects of expenditure, and explanations.	Estimated amount which will be required for each detailed object of expenditure.	Amount appropriated for the current fiscal year ending June 30, 1880.
POSTAGE.		
Official postage-stamps for the Secretary's office and the bureaus of the Navy Department (appropriated) .....	\$20,000 00	\$20,000 00
PRINTING AND BINDING.		
Printing and binding for the Navy Department, to be executed under the direction of the Public Printer (appropriated) .....	53,000 00	
CONTINGENT, NAVY.		
Rent and furniture of buildings and offices not in navy-yards; expenses of courts-martial and courts of inquiry, boards of investigation, examining boards, with clerks' and witness' fees, and traveling expenses and costs; stationery and recording; expenses of purchasing-paymasters' offices at various cities, including clerks, furniture, fuel, stationery, and incidental expenses; newspapers and advertising; foreign postage; telegraphing, foreign and domestic; copying; mail and express wagons, and livery and express fees, and freight; all books for the use of the Navy; care of library; experts' fees and costs of suits; commissions, warrants, diplomas, and discharges; relief of vessels in distress and pilotage; recovery of valuables from shipwrecks; quarantine expenses; care and transportation of the dead; reports, professional investigation, and information from abroad; and all other emergencies and extraordinary expenses, arising at home or abroad, but impossible to be anticipated or classified, per act June 21, 1879 .....	80,000 00	80,000 00

## No. 2.—NAVAL ACADEMY.

### REPORT OF SUPERINTENDENT.

UNITED STATES NAVAL ACADEMY,  
*Annapolis, Md., October 22, 1879.*

**SIR:** I have the honor to report that, in obedience to the orders of the department, I assumed the command of this institution on the 2d August last.

The academic year had closed, the cadets had been embarked on the practice vessels and sailed on their summer's cruise, and the professors and others of the academic staff, &c., had been granted their usual leave of absence.

After making myself as familiar with the Academy as the limited time would permit, I proceeded to Newport, R. I., and on the 25th August hoisted my flag on the Constellation and immediately proceeded to sea, in order that I might have an opportunity of witnessing the working of the ship by the cadets, and the mode of instruction imparted to them aboard ship, &c., all of which was entirely satisfactory to me.

The Constellation arrived at the Academy on the 29th August, and the practice steamers Mayflower and Standish the next day, when the cadets were disembarked, and all whose good conduct merited it were granted one month's leave of absence.

The examination of candidates for appointment as cadet-engineers commenced September 15. One hundred and seventy-seven reported for examination; 18 were found physically disqualified for the service, and 159 were subjected to competitive examination, and a report of the same forwarded to the department; when, in conformity with the law,



the first 25, viz, those who passed highest in order of general merit, were appointed cadet-engineers and received into the Academy.

The examination of candidates for admission as cadet-midshipmen commenced September 22. Fifty-two have reported for examination; 2 were found physically disqualified for the service; 1 declined to submit to the physical examination; 16 failed to pass the mental examination, and 33 were found duly qualified for admission and received into the Academy; making 253 cadet-midshipmen and 99 cadet-engineers; total, 352 cadets now in the institution.

The estimates for the support of this institution for the fiscal year ending June 30, 1881, were transmitted to you on the 13th instant.

The report of Commander F. V. McNair, U. S. N., of the practice cruise the Constellation and accompanying copies of papers, and of the reports of the instruction of the cadet-midshipmen in professional branches; and also of Lieut. Commander W. M. Folger, U. S. N., of the report of the cruise of the practice steamers Mayflower and Standish, together with the reports of the instruction of the cadet-engineers in professional branches meet my hearty approval, and are transmitted herewith for the information of the department.

I am, sir, very respectfully, your obedient servant,

GEO. B. BALCH,  
*Rear-Admiral, Superintendent.*

Hon. R. W. THOMPSON,  
*Secretary of the Navy, Washington, D. C.*

#### REPORT OF THE BOARD OF VISITORS.

UNITED STATES NAVAL ACADEMY,  
*Annapolis, Md., June 10, 1879.*

SIR: The Board of Visitors appointed to attend the annual examinations at the United States Naval Academy have the honor to submit the following report of their proceedings:

The Board met on the 2d instant and organized as follows: Commodore T. H. Stevens, president; Hon. M. J. Durham, vice-president; and Lieut. R. C. Derby, secretary.

The usual committees were appointed by the chairman, and at least one session held daily from June 2 to 10, inclusive.

The Board desire to express their pleasure at the promptness with which the Acting Superintendent and the officers and professors connected with the Academy have responded to their requests for information to facilitate their labors.

#### SEAMANSHIP, GUNNERY, AND NAVIGATION.

*Seamanship.*—The examinations afford evidence of careful and skillful instruction in the theory of this most important element of naval education.

The exercises on board the sloop-of-war Dale, under way, in which the ship was handled and all the incidental duties of seamen performed by cadet-midshipmen, with the spar exercise, sending down royal, top-sail, and top-sail yards, housing top-masts, and striking lower yards,

n part, were very satisfactory, affording a striking illustration of the advantages which attend practice.

In the theory of gunnery, the instruction is sufficient as it is; also in practice, so far as the means of the Academy permit. It is recommended that a steam-vessel of 500 or 700 tons be stationed at the Academy for gunnery practice. At present the instructors are limited to the Santee, which is for this purpose as immovable as the dry land, and the monitor, which, though most valuable as a special type of vessel, is so slow that firing from her is practically firing from a stationary platform. Such a vessel as indicated would be able to maneuver round a target. With a light battery of rifled and smooth-bore ordnance, the expense of practice would be no greater than at present, while the eye would receive that education in following a shifting target which is so essential at sea. Such a vessel would afford special advantages for practical exercise with the steam-engine and the handling of a steam-vessel, as well as for practice cruises at sea.

The system of instruction in theoretical navigation, with practical work at the Academy and on the practice cruises, affords all that is required to prepare an officer to navigate a ship or to make hydrographic surveys.

#### STEAM.

The department of steam engineering is found to be admirably conducted and in a very efficient condition, the instructions given in its theoretical branches being thorough. The practical instructions are also thorough and excellent, as far as the facilities for the same will permit.

The designing of marine-engines, screw-propellers, boilers, and various kinds of machinery, both general and in detail, involving as it does an extensive knowledge of descriptive geometry, is very efficiently taught; and the instruction of the use and manipulation of the several organs of machinery and generators, and the application of steam to useful purposes, is performed in the most complete manner by means of proper apparatus; besides which, the practical operation of working marine-engines, firing and feeding boilers, is efficiently done on board the monitor Nantucket afloat; also, by operating, connecting, and disconnecting the parts of the marine-engine erected on shore, thus leaving but little improvement to be desired in this direction. In order, however, that the education of the cadet-engineer may be more extended and thorough in not only a knowledge of the theory, the designing, and the varieties of metals employed, but also in a knowledge of the best methods of manufacturing the best materials, and practically executing with tools all work entering into an iron ship of war and the machinery for it, we recommend that the tools and facilities be increased, which shall include appliances for iron boat-building, and for laying down the lines of vessels and designing the detailed parts of the same. This may be inaugurated in an economical way by building small cutters and boats for the Navy including the machinery to accommodate the necessary additional appliances. The enlargement of the building has been recommended by this and the last Board.

#### MATHEMATICS AND MECHANICS.

The instruction in mathematics and mechanics is given with manifest thoroughness and enthusiasm, by means of elective branches which the



most proficient can procure. It is conducted also in a manner adapted to invite the most thorough efforts of which the student is capable. The minimum of attainment which he is required to reach in order to retain his place seems to the Board remarkably high; but yet he is securely guarded from injustice by a singularly fair and generous application of the rules for determining his standing. The great importance of this branch of study in its application to the arts of navigation in all their bearings seems to be duly appreciated by the instructors, and that application is demonstrated in the course of instruction with commendable clearness and precision. The whole ordering of this department seems so little open to criticism, that the Board have no especial suggestions to offer.

#### PHYSICS.

The course of instruction in physics is as extended as the time allotted permits. The apparatus has been selected with care and judgment, and is in good condition. In view of the importance of this branch, it is recommended that the appliances for purposes of illustration and investigation be made complete as possible, by continued additions of carefully selected apparatus by the best makers.

#### ENGLISH STUDIES AND MODERN LANGUAGES.

The examinations in these departments being chiefly written, the Board have carefully criticised the examination papers which have been submitted to their inspection, and have also attended the oral examinations. The system of instruction in French and Spanish is both comprehensive and thorough, and the progress made by the different classes evinces the fidelity of the instructors, together with their admirable method, and also the conscientious labor of the cadets. The officers of the United States Navy who receive this thorough instruction are competent to conduct negotiations through the medium of these languages, and to represent their government at all ceremonies where these tongues are spoken.

The department of English studies opens a somewhat wider field for the investigation of the Board. Their first observation is, that the standard of acquirements as a condition precedent to an admission to the Naval Academy imposes upon the accomplished corps of instructors duties which may quite as well be performed by the teachers in the common schools throughout the land. It would seem that instruction in spelling, in the rudiments of English grammar, and in punctuation ought not to be required of officers who are subsequently to teach the higher branches of history, international law, and the Constitution of the United States. As a consequence of this low standard for admission, much valuable time is consumed in purely elementary instruction at the expense of the government, and a needlessly large proportion of cadets fail to sustain themselves in competition with those who start upon their academic course with a sufficient knowledge of these essential prerequisites. Aside from the serious disappointment to young men who thus fail to pass their examination, the effect upon their subsequent career is much to be deprecated.

The Board are far from advising such a change in the standard for admission as would exclude from the Academy all save those who are thoroughly instructed in every branch of preparatory study; but they

are decided in the opinion, that the best interests of the service and the truest economy to the nation demand that the present standard for admission should be materially raised, so that the highest efficiency of the service may be secured, not only through the character but by the exact scholarship and the thorough scientific training of its officers.

The principle of competitive examinations before admission has already been applied to the cadet-engineers. The Board can see no reason why this system should not be extended to the appointment of cadet-midshipmen by members of Congress, and they are of opinion that it would exclude from the Naval Academy many candidates for admission whose acquirements and natural qualifications unfit them for its privileges. Passing from this subject, the Board remark that the tendency of an exclusive or purely professional education is apt to be a contracting one, and hence the importance of those studies which, while indispensable to an education for a particular profession, are broadening in their influence upon the character and intellect and tend to the highest development of an educated man. Of this class are the studies known in the academic course as "English studies," and embracing (besides those which the Board consider as being properly preliminary) rhetoric and the practice of composition; history, both European and American; the Constitution of the United States and international law, together with the examination of those general principles which control the complex relations of individuals and of nations. The importance of these studies to the officers of the United States Navy cannot be overrated; they fit them for association with the best trained minds with which they may come in contact; they render easy the subsequent acquirement of knowledge; they impart dignity, precision, and grace to their literary work, and they fit them for the sound decision of those complicated questions upon which may depend the issues of peace or war.

The Board have carefully investigated the methods of instruction in the department, and they cannot too highly commend them. The proficiency of the cadets is also gratifying. The Board earnestly recommend the enlargement of the course of instruction in English studies by the addition of moral and intellectual philosophy, political economy, and especially of the law of courts-martial. More work should not be required of young men already heavily burdened, but the elimination from the course of purely elementary studies will admit of the introduction of the higher branches.

The Board also think that additional interest would be imparted to the graduation exercises if essays upon professional subjects should be read or delivered by the most distinguished members of the graduating class. The introduction of this system would operate as an incentive to the cadets to perfect themselves in composition and elocution, and would continue throughout their academic course the principle of competition which has proved in other institutions of learning of most enduring value.

#### GROUPS, PUBLIC BUILDINGS, AND SANITARY CONDITIONS.

The Board find that the grounds of the Academy are in a highly commendable condition, and also that the various quarters and buildings are in good order, and, with some exceptions hereinafter mentioned, well adapted to their several uses, and that the sanitary condition of the institution is all that could be desired.

The exceptions to which the Board desire to refer are:

First. The building used for the cadet-quarters is not commensurate with the requirements of the Academy, and the division of quarters, as now existing, necessitates an increased amount of guards and expense, and lessens the efficiency of discipline. The Board, therefore, strongly recommend the addition of a wing to the rear of the new building, in order that the entire body of cadets may be domiciled under one roof.

Second. The Board would especially urge that the laundries now occupying the basement, or lower story, of the cadet-quarters, which is inadequate for the purpose, and also for sanitary reasons, be immediately moved into a separate building to be erected for that purpose.

Third. The Board cannot too strongly recommend the erection of an armory, the building now used for that purpose being in their judgment discredit to the government. It is an old wooden shed, now supported by outside braces to prevent it being blown over by the first heavy storm.

Fourth. The wooden building and the old hulk now used for the marine barracks is not only unsafe and unsightly, but is inadequate for the proper protection and comfort of the men, and should be immediately replaced by a proper building to be erected for their use.

Fifth. The Board finds that there exists such an urgent want of increased accommodation for necessary additional tools and facilities for the practical work required of the cadets studying in the engineering department, that they beg to repeat the earnest recommendation of the year of 1878 for the enlargement of the steam-building.

Sixth. The messroom for officers in the old quarters is uninviting and unattractive. The Board therefore recommend that this and the adjacent reception-rooms be refurnished and repainted.

The Board are well aware that these additions to the Academy will entail a large expenditure, requiring the action of Congress; and they earnestly recommend such legislation as will fully carry out the important alterations and improvements herein suggested.

The Board, being informed that the regulations of the Naval Academy prohibiting the use of tobacco as a wise sanitary provision is not now enforced, would most respectfully recommend that its strict enforcement be at once restored, as in their judgment the regulations against its use in any form cannot be too stringent.

#### FINANCE AND LIBRARY.

The Board have examined the books of the first aid to the Superintendent, and also the books of the treasurer, and find that the orders drawn by the former and the payments made by the latter correspond to a cent. They also find that these officers have been governed by the law in making the expenditures, and the amounts appropriated will be sufficient for the remainder of the fiscal year for the various objects as set out in the appropriations.

They have also examined the manner in which the commissary keeps his accounts. They seem to be plain, simple, and correct, and easily understood. The store seems to be kept in a business-like manner, and the officers in charge have, no doubt, kept an accurate account of the purchases of the cadets, and have charged them very reasonable prices for their articles. We are gratified in saying the whole financial department seems to be well conducted.



We have also looked into and examined the library. We are pleased to see the officers of the Academy taking such a lively interest in a good library. The present library is a very good one, and is in excellent condition. It contains many rare and valuable works, and while Congress has been making a reasonably good annual appropriation for its general increase, yet in consideration of the fact that the officers and cadets must necessarily be conversant with all the recent scientific works in this department, and as these are very expensive, the present appropriation is hardly adequate to purchase the necessary books; and we therefore recommend that the appropriations for books for the library be increased \$500, making it \$2,500 instead of \$2,000. The librarian should have ample means to purchase all the useful and scientific works connected with this important branch of the public service.

#### ADMINISTRATION AND POLICE.

The Board have examined into the general conduct and management of the institution, the discipline of the cadets, and the police regulation of the grounds, with much care. Some of the rules and regulations would seem to be harsh and unnecessary; yet, when we consider the large number now in attendance, and that irregularities on the part of a few must necessarily produce more or less confusion on the part of all, the discipline must be rigid and strictly enforced. We find that, as a general thing, the cadets observe the rules and regulations of the institution with the same alacrity and delight as they would have those do in after life who may be placed under them in their respective commands. We therefore have no change to recommend.

#### MISCELLANEOUS.

Inasmuch as the academic course prescribed for the cadet-midshipmen is by statute six years, the two years during which they are on board ships of war in commission prior to graduation are presumed to be included in the academic course, in order that they may attain the proficiency in the profession which can be acquired only in the actual application of theoretical knowledge. It is therefore eminently proper that the attention of commanding officers, to whose fostering care the cadets are committed, should be called to the great importance of affording them ample opportunities of so applying their theoretical knowledge in navigating and in working ship, as well as in performing such other duties as may tend to promote their familiarity with actual seamanship for upon their skill will depend the efficiency of our Navy of the future.

For the better instruction of the cadets in iron-ship building, we would respectfully recommend that models of the bow and stern frames and midship sections of the different systems in iron or steel be furnished the department of seamanship, as it is only by illustrations of this kind that accurate knowledge can be conveyed of the different frames and fastenings. The department has now models in wood, by which instruction in that branch is greatly facilitated and simplified.

The Board recommend that the vessels known as the Essex class of vessels shall, upon their return from sea, be sent to the Naval Academy to be overhauled and refitted in everything pertaining to their machinery, engines, and boilers by the cadet-engineers. We think that this

ould be a saving to the government, and that it would greatly promote the knowledge of practical steam-engineering among the cadets.

The Board recommend that transoms be cut over all the doors of the ward-house, and that the balconies be extended the entire front of the building.

The Board recommend that the heads of departments of modern languages and of drawing should, by appropriate legislation, be given permanent positions in the Navy. The Board consider that their duties are of the utmost importance, and that they have been discharged with skill and fidelity; and therefore earnestly recommend that their status be a permanent one, and that special chairs be established by legislation for this purpose.

The Board cannot conclude this report without expressing its profound sympathy for the family of the late Superintendent, Commodore Foxhall Parker, whose long and serious illness has for many months deprived our country and the Naval Academy of the services of one of its ablest and most accomplished officers, who died on the last day of the session of this Board.

The Board further desires to express its high appreciation of the ability and zeal displayed by the Acting Superintendent, Commander F. V. McNair, under whose wise and judicious management they find the Naval Academy in a thoroughly satisfactory condition.

T. H. STEVENS,  
(Commodore, U. S. N.,) *President.*

M. J. DURHAM,  
*Vice President, Danville, Ky.*

J. W. KING,  
*Chief Engineer, U. S. N.*

JAS. GRANT WILSON,  
*New York City.*

ELI H. MURRAY,  
*Louisville, Ky.*

WM. GODDARD,  
*Providence, R. I.*

JOHN M. BROOKE,  
*Lexington, Va.*

W. R. MYERS,  
*Anderson, Ind.*

E. BUSHNELL,  
*Fremont, Ohio.*

H. B. ANTHONY,  
*Providence, R. I.*

J. R. McPHERSON,  
*Jersey City, N. J.*

Hon. R. W. THOMPSON,  
*Secretary of the Navy.*



## No. 3.—BUREAU OF ORDNANCE.

BUREAU OF ORDNANCE, NAVY DEPARTMENT,  
Washington City, October 1, 1879.

SIR: I herewith submit the annual report of the operations of the Bureau of Ordnance, with detailed estimates of the amounts required for the fiscal year ending June 30, 1881.

## ESTIMATES.

1. Labor, tools, materials, and fuel used in fitting ships for service, and preservation of ordnance and ordnance stores, repairs to buildings, magazines, wharves, gun-parks, tugs, lighters, and boats.....	\$225,000 00
2. Torpedo service .....	45,000 00
3. Miscellaneous items, freight, telegrams, postage, advertising, &c .....	3,000 00
4. Civil establishment at navy-yards.....	11,886 25

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284,886 25

The estimates are the same as the sums appropriated for the current year, based on the actual expenditures at the several yards and stations in fitting ships for sea and in the preservation of ordnance material.

The last year has been one of great advance in developing the force of penetration of rifle projectiles and of concurrent efforts to produce armor of greater resistance with the same weight. In the case of the gun, it has been done by the application of well-known principles, but increase of length and diminution of caliber are perhaps carried to an excess. With the reduction of caliber, the shell is necessarily of small capacity, incapable of inflicting vital injury, and combats would be of long duration as before the introduction of shell firing. In naval combats the object is to lodge a powerful mine in the side or in the interior of the ship, which requires a large capacity shell; to penetrate armor plates, small diameter and great hardness and tenacity of material in the shell are necessary. It is probable that we have not reached a final solution of the problem, and that nothing has been lost by our enforced delay. It is, however, quite evident that all the older systems of naval ordnance are obsolete and monster iron-clads of less importance. The progress of metallurgy gives promise of obtaining suitable material with which to construct our future armaments whenever proper appropriations are made.

The monitors now building will each require two 10-inch rifles, which is deemed the most suitable caliber, as their projectiles will penetrate any vessel now built or building which can safely cross the Atlantic.

The conversion of XI-inch smooth-bore to 8-inch muzzle-loading rifles is continued, as it has proved a very safe and efficient gun.

The 60-pounder muzzle-loading Parrott rifles are also being converted to breech loaders.

The 80-pounder breech loader has been mounted on the Tennessee.

The Hotchkiss magazine rifle, caliber .45, has been adopted for the naval service, and is now issued to ships. It is an arm of remarkable simplicity and efficiency, not likely to be soon superseded by later inventions, and is one to which detachable magazines hereafter devised may be applied.

With the change of caliber of the shoulder gun it became necessary, in order to avoid confusion on board ship, to alter the machine guns to the same caliber. The bureau has therefore made arrangements for the con-

sion of 30 of the Gatlings to the latest and best model, which is much more efficient.

No funds have been available for the purchase of the larger class, such as the Hotchkiss revolver cannon, which now form such powerful adjuncts to the defense of ships against movable torpedoes.

The Torpedo School at Newport has graduated the usual class of 20 members.

But little improvement has been made in either the offensive or defensive use of torpedoes. Some experiments have been made with a very simple aggressive torpedo, devised by Captain John Ericsson, to be projected from a gun of heavy caliber by a charge of powder, the force limited and controlled by the amount of air-space. It was demonstrated that the torpedo pursued a course corresponding with the curved line of flight, the final inclination coincident with the angle of fall; also that the trajectory could be flattened and the angle of inclination of the torpedo varied by the use of vanes or wings. Further experiment will be necessary to determine the conditions requisite in practical use.

I have the honor to be, very respectfully, your obedient servant,

WILLIAM N. JEFFERS,

*Commodore, Chief of Bureau.*

Hon. R. W. THOMPSON,  
*Secretary of the Navy.*

#### NO. 4.—BUREAU OF EQUIPMENT AND RECRUITING.

NAVY DEPARTMENT,  
BUREAU OF EQUIPMENT AND RECRUITING,  
*Washington, October —, 1879.*

SIR: I have the honor to submit herewith the annual report of this bureau, with accompanying detailed estimates for the fiscal year ending June 30, 1881.

These estimates conform to the appropriations made for the fiscal year 1879-'80, with the necessary addition of \$90,000 under appropriation "Pay of the Navy," and \$5,000 under appropriation "Contingent Equipment and Recruiting," to enable the bureau to comply with the act

May 12, 1879, authorizing the enlistment of 750 apprentices and boys, and \$100,000 additional, under "Pay of the Navy," for pay of 500 enlisted men, \$2,400,000 being required for that purpose, while \$2,300,000 was appropriated for the current fiscal year.

During the past fiscal year 77 vessels have been either wholly or partially equipped at the several navy-yards, at an expenditure for labor \$105,815.53, and for material of \$549,011.57.

Forty-one thousand three hundred and thirty-two tons of coal have been purchased at home and abroad, costing, including freight, \$97,531.

Two hundred and twenty-seven thousand one hundred and ninety-four pounds of Russia, 336,150 pounds of Manilla, and 112,775 pounds of American hemp have been purchased, at an aggregate cost of \$3,675.78.

There have been no contracts made during the past fiscal year; the supplies needed from time to time have been purchased in small quantities under "open purchase"; and experience has satisfied the bureau

that this mode of making purchases is more advantageous to the government, and more especially so under present limited appropriations for supplies.

#### ROLLING-MILL.

The new rolling-mill at the Washington Navy-Yard has proved a perfect success, and since its erection, in 1878, has accomplished a saving of nearly \$12,000, being more than \$2,000 over and above its original cost. It is now furnishing large quantities of round, bar, flat, and angle iron for the use of the several Bureaus, and is capable of producing plate-iron, of a superior quality, weighing 800 pounds. With a moderate additional expenditure, all the plate-iron required for the manufacture of boilers for the Navy could, in my opinion, be made at this navy-yard. The erection of this mill has enabled the bureau to re-work and utilize all the condemned chains and iron which have been accumulating for many years at the different navy-yards, thereby supplying the service with an excellent quality of iron and effecting a great saving to the government. The capacity of the mill, at the present time being insufficient to meet all the demands made upon it, and in view of its great success, I would recommend that two additional furnaces, with boilers and hammer, be erected at a cost not to exceed \$8,000.

#### WIRE BOARD.

The board for testing different kinds of iron and steel wire completed its work some months ago. The results have been published and give general satisfaction. By purchasing wire direct from the manufacturers the bureau has effected quite a reduction in that item of expenditure.

#### ROPE-WALK.

The rope-walk at the Navy-Yard, Boston, Mass., has undergone the much-needed and quite extensive repairs during the past summer, and is now in complete working order.

During the year 848,726 pounds of cordage have been manufactured, comprising all the hemp, wire, and hide rope required for use in the Navy.

#### ANCHORS AND CHAINS.

All the anchors and chain cables used in the Navy are manufactured in the Washington Navy-Yard.

The Bureau has been and is still making experiments with anchors of different patterns, in the hope of obtaining a satisfactory non-fouling anchor which will fulfill all requirements.

#### GALLEYS.

All galleys required on board of our men-of-war are also manufactured at this yard. Improvements are constantly being made in their construction, with the view of supplying the many wants so essential for the proper preparation of food.

#### COAL.

During the year advantage was taken of the low price of coal and freights to fully supply our several coal depots and stations. In order to stimulate our own industries, instructions have been given to the



commanding officers on foreign stations to use American anthracite coal, in preference to foreign coal, whenever it could be procured of a good quality and without additional cost.

#### WATCH, QUARTER, AND STATION BILLS.

These bills, lately gotten up by this bureau, seem to have secured a uniform system for stationing men on board of our vessels of war, and answer admirably all requirements.

#### HONORABLE DISCHARGES AND CONTINUOUS-SERVICE CERTIFICATES.

During the year, 620 men have received honorable discharges, of which number 499 were granted continuous-service certificates and 336 good-conduct badges.

Four hundred and sixteen men have re-enlisted under honorable discharges and continuous-service certificates.

The following men have received medals of honor for heroism in rescuing shipmates from drowning, viz: Thomas Smith, seaman, Enterprise; Walter Elmore, seaman, Gettysburg; John Flannagan, boatwain-mate, Supply; P. J. Kyle, landsman, Quinnebaug.

#### RECRUITING.

There were 7,406 men in the service on the 30th day of June, 1879, distributed as follows:

Boat (including 794 apprentices).....	6,629
Available and detailed.....	183
Apprentices under instruction.....	459
Absent in hospitals.....	135
	<hr/>
	7,406

During the year the number of enlistments to replace men discharged by reason of expiration of term of service and other causes amounted to 1,119.

The exhibit of the conduct reports received from vessels in commission continues to show a marked improvement in the *morale* of the enlisted men, conducing greatly to the efficiency of the service.

A source of impairment, however, to which I desire to call your attention, has long existed in the service, and tends to weaken our already very limited working force of seamen. I speak of the large number of men that might be called old, worn-out man-of-war's men. These men having spent their youth and vigorous manhood in the service of the government, naturally drift back to the only home they have ever known, and frequently are enlisted more through sympathy than from any anticipated service they may render afloat. The Navy of to-day is hampered with them, and I therefore earnestly recommend that some legislation be called for (other than by enlistments) tending towards the care and employment of these deserving people, who, in consequence of their long and faithful service, ought to be regarded as wards of the nation and be fostered by the government.

In connection with this subject, I also have to state that the effective force of the service is very materially crippled by the taking away from the 7,500 men allowed by law 275 men who are almost constantly employed in the Coast Survey service. The United States Naval Academy also draws its quota, amounting in the winter months to 100 men,

and during the summer cruise for cadets 371 men are required to man the practice ships. Thus we find an aggregate of 375 men in winter and 646 in summer, employed in a useful yet special service, and not available for regular cruisers.

I therefore respectfully recommend that legislation may be asked for to make the allowance of men required for these two branches of the service, viz: the Coast Survey and the United States Naval Academy, a special one, and independent from the allowance of men for the Navy.

#### TRAINING SYSTEM.

The reports from the commanding officers of cruising-ships who have received boys from the training ships, speak in the highest terms of them.

The Bureau is satisfied that, with judicious care in handling, and attention on the part of the officers in instructing these boys, the service, in a few years, will be supplied with a superior class of intelligent, well-trained American seamen, of whom the nation may justly be proud.

On the 12th of May last, Congress passed an act allowing 750 boys to be enlisted annually, in addition to the 7,500 men and boys already allowed by law; at the same time changing the ages at which these boys should be enlisted from 15 to 18 years, instead of from 16 to 18 years. I think it would have been more satisfactory if the law had been so modified as to have taken them between the ages of 14 and 16 years, as boys are then more satisfactorily managed, and are not so mature as to have acquired fixed habits.

Shortly after the passage of the law, steps were taken for the enlistment of boys in different sections of the country, recruiting heretofore having been principally confined to the seaboard. Accordingly the United States steamer Wachusett was dispatched up the Mississippi River, with instructions to proceed as far as Saint Louis, Mo., and to recruit at different places, both going up and returning. On account of insufficient depth of water, she failed to reach her destination. However, a rendezvous was opened in Saint Louis, and it required but a short time to fill the quota allotted to that section.

At the same time instructions were given to the United States steamer Michigan to recruit at numerous places on the lakes; the United States steamer Minnesota was sent up the North River; the United States ship Saratoga and United States ship Portsmouth touched at many of the Eastern ports during their summer cruise, and in this way, from the passage of the law to this date, upwards of 600 fine, healthy, bright lads have been recruited, representing almost every State in the Union.

Early in the season it was thought advisable to have the training ships assemble at Hampton Roads during the month of October for drill and exercise. Instructions were accordingly given to that effect, and at the inspection which took place on the 14th and 15th instants you were satisfied with the very creditable manner in which the boys acquitted themselves.

The old frigate Constitution has lately been added to the list of training ships, and I find it necessary to have at least one more vessel added to the number, in order to keep the boys up to the many requirements.

With four cruising-ships, I would recommend that they all cruise during the summer. In winter, while two might make a southern cruise, the other two could be profitably employed at the headquarters for training ships, in refitting, &c. I find the Minnesota entirely too large for a cruising training ship, and in that capacity very expensive. I would



Therefore recommend that she be used as a headquarter's ship, and be stationed permanently at some convenient naval station to receive and prepare boys for the cruising training-ships.

Numerous complaints are constantly being received concerning the ration, not so much on account of the quantity as the variety. I would suggest that a board be ordered to thoroughly investigate the matter, and to recommend such changes as might be consistent.

In May last, Lieutenant-Commander Chadwick, U. S. N., who was sent in England, was instructed to visit the different training stations in England and France, and make a report upon them to this Bureau.

The report has been received and gives great satisfaction, and in a printed form would be of much service to the officers connected with the rationing system. I would recommend a limited number be printed for that purpose.

In conclusion, I earnestly renew the recommendations of my predecessor in office, that an outfit of clothing be furnished gratuitously to men and boys upon their entering the service for three or more years. This practice prevails in the Army and Marine Corps, and it would seem nothing more than justice that "Jack" should have the same. By its adoption in the Navy, I am satisfied it would tend very materially to reduce the number of desertions. This allowance is especially desirable for the boys. Their pay on entering being so small, the plainest outfit of comfortable clothing keeps them in debt many months, thereby tending to dishearten them at the start, and to give them a distaste for the service. It must be remembered that the clothing they bring with them from their homes is all lost, for nothing but uniform is allowed to be worn on board ship.

Very respectfully, your obedient servant,

EARL ENGLISH,  
*Chief of Bureau.*

Hon. R. W. THOMPSON,  
*Secretary of the Navy, Washington, D. C.*

## NO. 5.—BUREAU OF NAVIGATION.

BUREAU OF NAVIGATION, NAVY DEPARTMENT,  
*Washington, D. C., October 25, 1879.*

SIR: I have the honor to submit the following report of the Bureau of Navigation for the past year, together with the estimates for its support, and for the expenditures that will probably be required in that provision of the naval service committed to its immediate charge, for the fiscal year ending June 30, 1881. Included in this report, and transmitted herewith, are the reports and estimates of the several offices under its cognizance, and an abstract of offers for supplies received.

### NAVIGATION.

In the allowance of nautical instruments and other navigation supplies for ships-of-war, no change has taken place during the past year. Owing to limited appropriations, the stock of instruments could not be materially increased, but those available were kept in good order. The superior character of instruments used in the Navy is well established, notably is this the case with chronometers, liquid compasses, and bar-

ometers, and it is also gratifying to state that these instruments, as well as sextants, octants, quadrants, surveying and other instruments of precision, of excellent quality, can now be obtained from American makers only in the matter of superior binocular glasses the Bureau had to resort to foreign manufactures, and it is hoped that this branch of industry may soon be developed to make importations unnecessary.

Unless some emergency arises, it is believed that the supply of liquid Navy compasses is sufficient for the service of the current fiscal year but, if the appropriations will permit, it is proposed to add to the stock of nautical instruments a number of superior sextants and chronometers of American manufacture, to replace those to be retired from use.

Of the many compasses and sextants purchased during the late war the inferior instruments have since been gradually retired and sold, leaving, however, a considerable number of dry compasses and ordinary sextants yet on hand. There remains also from the late war a vast number of signal lanterns, running and standing lights, ordinary lamps and lanterns, of obsolete forms and inferior construction, which take up considerable space in the storehouses. I earnestly recommend that legislation be obtained to sell such stores and devote the proceeds to the procurement of articles of improved kind.

#### HYDROGRAPHY.

I take pleasure in referring to the appended report of the Hydrographer of the operations of the Hydrographic Office during the past year, proving very efficient management of its affairs and a high degree of usefulness. It is particularly gratifying to note that the charts, sailing directions, and current hydrographic notices which emanate from this office are appreciated by mariners at home and abroad, as evinced by increased sales and by requests from foreign hydrographic offices for an exchange of publications.

The usefulness of the Hydrographic Office could, however, be greatly enhanced if more liberal appropriations were made for foreign surveying and explorations.

The examinations of the great oceans, with their innumerable rocks, islands, and reefs, real and imaginary, would seem to be the duty of the navies of civilized nations, and no more useful and creditable service can be performed by naval officers in time of peace. The labors of the several expeditions sent out from this country years ago under Commander Charles Wilkes, Commodore M. C. Perry, and Commander John Rodgers, were not only highly creditable to this country and to all who were engaged in those expeditions, but they form in many instances the only information we have at present of many distant parts of the world. The soundings made in the North Atlantic by United States naval officers were found extremely useful in the projection and laying of the Atlantic cables, and the work of Captain George E. Belknap of sounding across the Pacific Ocean is soon to bear fruit in the proposed cable connection between this country and Japan. As civilization and commerce are spreading over the globe, all work of this kind will become practically useful, and those engaged in it be honored.

Prior to and since the establishment of the Hydrographic Office of this Bureau, naval officers have been engaged in collating the many reported dangers of the great oceans. Books have been published containing descriptions of them, and their positions have been marked on the charts. It may be fairly assumed that the greater part of those dangers does not exist, and that their number was multiplied through several persons

reporting the same danger in different positions, owing to faulty reckoning and observations or to defective instruments.

But as long as these doubtful dangers to navigation are not properly examined and located, if existing, or eliminated from books and charts if not existing, their presence on the charts and books will always be a source of evil and insecurity to the mariner who has to grope his way among them to his place of destination.

I, therefore, recommend that the Department take the examination of reported dangers in the Atlantic and Pacific Oceans into serious and favorable consideration. It cannot be expected that the work here proposed can be finished in a few years or in a space of time to be stated in advance. If the Department cannot, on account of insufficiency of funds or for other reasons, fit and send out expeditions composed of a number of vessels, as was done before, it is respectfully suggested that a practical beginning be made by detailing at least one vessel for this service in the Atlantic and another for the Pacific Ocean.

Searching for hidden or visible dangers to navigation is no longer as difficult as it might appear, for with our improved sounding apparatus the depths can now be readily ascertained, and any serious diminutions in the soundings would be fair indications of the presence of neighboring shoals, reefs, or islands.

From the great number of dangers now borne on our charts, it is evident that the work here proposed will, of necessity, have to be done sooner or later. The sooner it is done the more lives and property will be saved, and every examination of a doubtful position, if properly executed, helps to lessen the present insecurity of the navigation of many parts of the great oceans.

The thanks of this Bureau are due to the commanding officers of squadrons and vessels, for the promptitude with which they complied with general instructions for the collection of hydrographic and other information useful in navigation, and with occasional requests for specific work of sounding and surveying.

In completion of the work of telegraphically determining the longitudes of the east coast of South America, Lieut. Commander F. M. Green has measured the exact difference of longitude between the observatories of Greenwich and Lisbon, thus connecting former measurements with the primary meridian; and Lieut. Commander C. H. Davis has measured in the same manner between Pernambuco and Rio de Janeiro (the breaking of the telegraph-cable between these points having prevented this measurement last year), and from Pernambuco to Para. A complete chain of telegraphic measurements has thus been made with great exactness, for the first time, from Greenwich to Buenos Ayres, establishing precisely the geographical positions of Lisbon, Madeira, Porto Grande, Pernambuco, Bahia, Rio de Janeiro, Montevideo, Buenos Ayres, and Para.

This work of fixing the geographical positions of a number of principal points on the Atlantic Ocean with almost absolute correctness is of prime importance, and the manner in which it was projected and carried out reflects great credit upon the officers engaged in it and on the Navy generally.

The United States steamer Tuscarora, Commander J. W. Philip, having, during the past season, surveyed the west coast of Mexico from Mangrove Point to Port Ventosa, has returned to her field of operations, and it is expected that the projected survey from the said port to the Gulf of Fonseca will be completed during the present season.



From the surveys thus far received from Commander Philip, it is inferred that the work will be done in a thorough and satisfactory manner, and the charts to be constructed therefrom, connecting with those of the surveys previously made under Commander George Dewey in the United States steamer Narragansett from the United States boundary to Cape Corrientes, will form a valuable contribution to geography and improve aids to the navigation of the waters near that part of the coasts of this continent.

Additional appropriations will be required for the preparation and publication of these surveys, as also for those made last year by Commander T. O. Selfridge, of the Amazon and Madeira rivers.

Commander L. A. Beardslee, commanding the United States ship Jamestown, stationed in Sitka Harbor, is employing his time in a very useful manner, in surveying and sounding, and in placing buoys and beacons for the safer navigation of the channels. All data of this kind thus far received from the Jamestown have been forwarded to the office of the United States Coast and Geodetic Survey for publication.

The United States steamer Essex, Commander W. S. Schley, before leaving the South Atlantic station for home, performed the very important service of examining the approaches to the La Plata River, proving by the many lines of soundings made off and to the shore, and by cross lines, that this examination was efficiently executed, and that the chart of the mouth of that river will be greatly improved thereby.

The United States ship Saratoga, Commander R. D. Evans, has obtained valuable deep-sea soundings during her late cruise to the Azores, Madeira, and Canary Islands.

From the United States steamer Ticonderoga, the flag-ship of Commodore R. W. Shufeldt, some interesting reports and data of explorations of parts of the coast of Liberia and the mouth of the Congo River have been received.

The collection of material for the Sailing Directions for the Mediterranean Sea, upon which Lieut. Commander H. H. Gorringe had been employed, has come to a close through the breaking down of the machinery of the United States steamer Gettysburg last spring. From the data obtained, three volumes have been published.

Commander Frederick Rodgers has sent to the bureau an interesting report of the cruise of the United States steamer Adams from Panama to the Samoan Islands, which contains much useful information.

The United States steamer Wachusett, Commander Byron Wilson, is under orders to run a line of deep-sea soundings on her way from Boston to the coast of Brazil, and to examine some reported dangers.

#### SIGNALS.

From the quarterly returns received from vessels in commission, it is inferred that satisfactory progress is made in the instruction and practice of signaling by the Army method.

Some very important trials of different kinds of night signals have been made during the past year at the Naval Academy, with results generally favorable to the signal invented by Lieut. E. W. Very, U. S. N.

#### NAVAL OBSERVATORY.

I beg leave to invite your attention to the appended report of Rear Admiral John Rodgers, of the operations of the Naval Observatory

is recommendations for an early removal of the observatory to a better site, I fully concur in; also those for increased appropriations, for the amounts appropriated for several years past have been found inadequate for the maintenance of the Observatory in a manner conforming to its high standing as a national scientific institution.

## NAUTICAL ALMANAC.

The appended report of the superintendent of the Nautical Almanac states the number of volumes of the Ephemeris sold and distributed for public service and for scientific and educational purposes; it states also in detail the condition of the work of preparing the annual volumes in advance, and refers to the progress made in the investigations for the improvement of astronomical tables.

The superintendent mentions that delays have been experienced during the two past years in printing copies of the Nautical Almanac at times when they were most needed, which it is hoped the Department may find means to prevent hereafter.

Respectfully submitted.

WM. D. WHITING,  
*Chief of Bureau.*

Hon. R. W. THOMPSON,  
*Secretary of the Navy.*

OFFICE OF SUPERINTENDENT OF COMPASSES,  
BUREAU OF NAVIGATION, NAVY DEPARTMENT,  
*Washington, October 15, 1879.*

SIR: I have the honor to submit the following report for the current year:

During the past year, with the exception of such routine duty as has been presented, I have devoted my whole attention towards the completion of my work on nautical magnetics. As is well known to the Bureau, I have been engaged in studies of this subject, including more especially the theory and use of the marine compass when subjected to the magnetic action of an iron ship, for a considerable number of years; and, for several years past, when not otherwise occupied with the general duties of the office assigned me, I have been employed in the preparation of a manual thereon for the use of the Navy and commercial marine. Some delays have occurred from time to time from causes that need not be particularized in this place in the completion of this undertaking; but it is my present expectation to have the copy of the text and tables ready for the printer early in the coming spring.

In obedience to your order I have recently been in communication with the inventor of a proposed apparatus for determining the magnetic course of a ship, independently of any reference to the compass on board, and, therefore, independently of any deviation of that compass caused by the iron of the ship. The means proposed to be employed for this purpose by the inventor are highly ingenious; but the question of the practical utility of such an apparatus will essentially depend on its ability to maintain its own directional relations with entire reliability, or at least within the limits of allowable error. Of this I have serious fears, under the varying circumstances of its use at sea, as detailed at some length in my correspondence with the inventor. A careful trial of the



apparatus will, however, be requisite to settle some of these questions from a practical point of view.

I am, sir, very respectfully, your obedient servant,

B. F. GREENE,

*Professor United States Navy, Superintendent of the Compasses.*

Commodore WM. D. WHITING, U. S. N.,

*Chief of Bureau of Navigation, Navy Department.*

HYDROGRAPHIC OFFICE,  
BUREAU OF NAVIGATION,  
October 13, 1879.

SIR: In accordance with the Bureau's order of the 4th instant, I have the honor to submit a report of the operations of the Hydrographic Office for the past year.

During the fiscal year ending June 30, 1879, the following work was done in the drafting and engraving department:

#### I. WORK LEFT UNFINISHED IN THE PREVIOUS FISCAL YEAR.

The engraving of the unfinished sheets of the general chart of the South Pacific Ocean in eight half sheets has been completed with the exception of one sheet, which will be completed in a few weeks. Numerous new surveys by the different maritime nations having possessions on the shores of the Southern Pacific Ocean have been published during the compilation and engraving of these charts so that extensive additions and corrections have to be made on the plates before prints from them can be issued. These emendations are progressing rapidly.

The manuscript charts of the Indian Ocean in four sheets are subject to extensive corrections, owing to a new survey of the British possessions in the East Indies by the recently established Indian Marine Survey. The desire to avoid erasures in the new plates has retarded the progress of the engraving, but the manuscripts for the two upper sheets are in the hands of the engravers, those for the two lower ones being nearly finished.

The manuscripts for the four half sheets of the chart of the North Atlantic Ocean are also progressing rapidly, they being furnished to the engravers in parts, so that the drafting and engraving progress together.

As soon as these charts, with the chart of the South Atlantic Ocean, are completed, the office will be enabled to furnish to navigators new and carefully compiled charts of all the oceans, in place of the imperfect and nearly obsolete charts on various scales, from the plates purchased from E. and G. W. Blunt. These new charts will be on a uniform scale of six-tenths of an inch to a degree of longitude, a scale permitting their use in navigation close up to the coasts, and even into the larger channels, and considered the most advantageous for general use.

It has been necessary to defer the publication of a chart of the Mediterranean Sea in three sheets, owing to extensive surveys now in progress by the Italian, Spanish, and French Governments, the latter having undertaken the survey of the entire coasts of Algeria, Tunis, and Tripoli. As these surveys are now nearly completed, the work may again be taken in hand.

The engraving of the outline chart of the entire Mediterranean Sea has been finished.

A chart of the island of Guadeloupe has been so far engraved as to show its preliminary use, and the mountain topography is now being inserted.

## II. NEW WORK COMPLETED DURING THE YEAR.

Charts replacing those of the United States Exploring Expedition of the harbors of Pago-Pago and Allier Bay have been engraved and numerous additions from recent surveys have been made to the plates of other charts of the Wilkes' survey.

Twelve new charts, mostly sketches, were photolithographed, among which were the following from surveys by United States naval vessels: The Tartar shoal, an important danger on the west coast of Mexico, surveyed by the United States steamer Tuscarora.

Cape Mount and the Sugury and Mahfah rivers on the coast of Liberia, the United States steamer Ticonderoga and the Gorringer bank off the west coast of Spain, discovered by the United States steamer Gettysburg.

Extensive additions and corrections from recent surveys have been made on the plates of the English and Irish channels.

The plates of the eastern coast of the United States purchased from G. W. Blunt have been thoroughly overhauled and made to agree with the charts of the United States Coast and Geodetic Survey.

Deep-sea soundings made during the year by several of our naval vessels during their cruises, by the United States steamer Tuscarora on the west coast of Lower California, by the United States Coast and Geodetic Survey in the Gulf of Mexico and Caribbean Sea, and by foreign vessels, have been entered on all the charts affected.

Current corrections, such as changes in lights, buoys, &c., have been made on the greater number of the plates affected; on some of them nearly every week.

A complete series of projections for the Arctic Sea, north of Behring's straits, and a number of tracings of Russian harbor charts, were furnished to the steamer Jeannette, commanded by Lieutenant De Long, U. S. N., as well as tracings and drawings to different branches of the Navy Department for various purposes.

## III. WORK ENTERED UPON AND STILL IN PROGRESS.

A chart of the North Sea, in two sheets, is being engraved, mostly from photographic reductions of the charts published by the governments bordering on that sea.

The survey of the Amazon river from the sea to the mouth of the Madeira river, and of the Madeira river to the falls of St. Anthony, by Commander T. O. Selfridge in the United States steamer Enterprise, is being laid down in this office from the field books of the survey, and the plotting will be finished before January 1, 1880.

Photographic reductions to the scale thought best for publication are made as the plotting progresses, so that the engraving can be taken in hand as soon as means for it are appropriated.

Valuable assistance has been received from the United States Coast and Geodetic Survey in electrotyping plates, the charts of which are in constant demand, so that the plates which would otherwise be soon worn out are preserved for a long time.

The following volumes of sailing directions, &c., have been published during the past year:

Coasts and Islands of the Mediterranean Sea—Part III—by Lieutenant Commander H. H. Gorringe and Lieut. S. Schroeder.

A list of Reported Dangers to Navigation in the Pacific Ocean—Part II—(numbering 1,302) compiled by Lieut. J. E. Pillsbury, U. S. N.

List of lights No. 1 on the east and west coasts of North America.

Lists of lights No. 2 on the south and east coasts of Africa and the East Indies.

List of lights No. 3 on the west coast of Africa and the shores of the Mediterranean Sea.

List of lights No. 4 on the Atlantic coast of Europe, the English Channel and North Sea.

Catalogue of charts, plans, and books published by the United States Hydrographic Office.

Besides supplying United States naval vessels with all charts, books, &c., required for purposes of navigation, 6,613 charts, and 1,016 books of sailing directions, &c., have been sold through the authorized agents, and the proceeds have been deposited to the proper credit in the United States Treasury.

As information has been received, "hydrographic notices" relating to discoveries and changes in the natural features of navigable regions and "notices to mariners" relating to changes in and additions to artificial aids to navigation (lights, buoys, &c.), have been published. The arrangement and publication of this information received from many sources, and in many languages, involves great labor and care. Among other sources of information this office is constantly exchanging publications with the hydrographic offices of England, France, Denmark, Sweden, Russia, Spain, Italy, Austria, Portugal, Holland, Belgium, Germany, India, Japan, Brazil, Buenos Ayres, and Chili.

The issue of these indispensable aids to navigation has steadily grown till now the yearly issue, when bound, forms two large octavo volumes and constitutes a complete synopsis of the hydrographic work of the world.

Until the present year these notices only contained matter relating to foreign waters and coasts, but since January 1, 1879, all information received from the United States Coast Survey, the United States Light House Board, and other sources relating to the coasts of the United States, has been published in a similar manner.

One hundred and nineteen notices to mariners and eighty-seven hydrographic notices have been thus issued during the past year.

In the meteorological department of the office, recently under charge of Lieut. T. A. Lyons, and now in charge of Lieut. C. H. Judd, compilations have been made for the formation of meteorological charts of the North and South Atlantic Oceans, similar to those of the Pacific Ocean already issued. It will require another year to complete this work and have it ready for publication. As I stated in my last report, it is proposed to continue it until the whole surface of the navigable oceans is completed.

The merchant marine has very efficiently assisted in collecting data for the work, and a number of our journals which were issued to our vessels as blanks have been returned to the office filled with useful information.

The United States steamer Tuscarora, Commander J. W. Philip, has been engaged in the survey of the west coast of Mexico and has made excellent progress, having completed the work as far south as the Gulf of Tehuantepec. Four coast sheets and fifteen plans of harbors have been received from Commander Philip, the plans being in most cases of harbors of which no chart has heretofore existed. These charts are a



subject to the final corrections, which can only be made when the entire work is completed.

The very high character of the work done by Commanders Dewey and Philip on the coasts of Lower California and Mexico encourages the hope that Congress will make an appropriation for more extended surveys of the Pacific Ocean, the results of which would be of the greatest assistance to navigators, and I cannot too strongly urge that some steps may be taken to this end, in order that the numerous islands, rocks, and shoals which are now carried on the charts, the existence and positions of which are in many cases doubtful, should be accurately and finally determined.

Commander Schley of the Essex has rendered very valuable services to hydrography by his examination of the approaches to the Rio de la Plata, and by the zeal and energy which he has exhibited in making open-sea soundings, and furnishing information for the benefit of navigators.

Lieut. Commander F. M. Green, with his assistants, Lieut. Commander H. Davis, Lieut. J. A. Norris, and Assistant Paymaster A. K. Michler, has successfully connected the chain of telegraphic longitudes measured from Lisbon to South America last year with the primary meridian of Greenwich, by exchanging time signals between Lisbon and Greenwich. After completing this work Lieut. Commander Green returned home, and Lieut. Commander Davis, with the other officers, proceeded to complete the chain of measurements, by the exchange of signals between Rio de Janeiro, Bahia, and Pernambuco, and by the exact determination of the latitude and longitude of Para.

This work, by instruments and methods eminently American, has fixed with unexceptionable accuracy nine secondary meridians, including the longitudes of three important national observatories, Lisbon, Rio de Janeiro, and Cordova, about the exact positions of which some uncertainty has existed.

It is very desirable that when time and opportunity permit, these observations should be extended and continued. With the wide and increasing extent of submarine cables and land telegraph lines, there is every reason to expect that the uncertainty attending the longitudes of remote points will soon cease to exist.

Since my last report a department of longitudes has been organized in addition to the other departments of this office, its object and duties being to verify all geographical positions, data for which may be received from the office from all sources, and to make and keep an accurate list of latitudes and longitudes of all points on the coasts of the world, as far as they can be ascertained.

The charge of this department has been given to Lieutenant-Commander F. M. Green, who, from long connection with similar duties, is eminently fitted for it.

While the importance of the Hydrographic Office has been continually increasing and the work upon which it is engaged has been growing from year to year, the appropriations for its support have remained the same, so that but little remains of its funds for the publication of new charts after the current expenses of the office are defrayed.

As the object in establishing the office was to render this country independent of all others as regards charts and sailing-directions, it is very desirable that the appropriations should be increased, or that some other method of reproducing our publications should be adopted which would be economical and at the same time efficient, so that by the time our commerce will attain that position among the nations to which it is entitled

we may be independent of them by being able to furnish all desired hydrographic information from our own publications.

Very respectfully, your obedient servant,

S. R. FRANKLIN,

*Captain, U. S. N., and Hydrographer.*

Commodore W. D. WHITING,

*Chief of the Bureau of Navigation, Navy Department.*

NAVY DEPARTMENT,

BUREAU OF NAVIGATION, SIGNAL OFFICE,

*Washington, October 23, 1879.*

SIR: In compliance with the order of the Bureau of Navigation of the 6th instant, addressed to this office, I have the honor to submit the following report of the operations of the Signal Office during the past year:

On the 1st of May, 1879, I was placed in charge of the duties of this office, relieving Commodore J. C. Beaumont.

During the months of November and December, official experiments were carried on at Annapolis under the direction of the Bureau of Navigation with a view to determine the relative merits of several systems of night signals. The report of the board was in general in favor of the system submitted by Lieut. E. W. Very, and experiments are now in course of prosecution for the purpose of modifying this system and rendering it thoroughly practical.

Several inventions pertaining to signals that had been developed by my predecessor, Commodore Beaumont, and also several suggestions of minor importance made by foreign governments, have been examined, tested, and reported upon during the year.

The regular instruction of officers and men in the system of day and night signaling have been carefully attended to, and the quarterly reports during the year show a very satisfactory amount of progress.

The international code of day signals adopted by the Navy in 1873 having now come into general use throughout the world, and being used constantly at sea as a means of communicating intelligence, I would respectfully recommend that the scope of signal instruction be enlarged so as to include a thorough instruction of officers and men in the names and use of flags of this code.

Respectfully submitted.

C. H. WELLS,

*Captain and Chief Signal Officer.*

Commodore W. D. WHITING, U. S. N.,

*Chief of Bureau of Navigation.*

UNITED STATES NAVAL OBSERVATORY,

*Washington, October 20, 1879.*

SIR: In submitting the following report of the operations of the Naval Observatory during the past year, I beg leave strongly to recommend the removal of the institution to a better site.

The present grounds are malarious; the river fogs obscure the vision, rendering it less clear than in a position more removed from the water.

When the contemplated improvements are made on the river front, which seem only the question of a short time; when the marsh partly encircling the observatory is filled in, and the hill on which the build-



rests is used as a top-dressing to the land thus acquired, this part of the city will be the center of its water commerce; and its value to the government will be greater than the cost of a new situation for the observatory.

It thus seems that when the hill is cut down, the selection of a new site will be imperative. It will be better to select this new site now, for the cost will be greater in the future.

#### THE 26-INCH EQUATORIAL.

The observers on this instrument have been the same as in the preceding year, namely, Prof. Asaph Hall, in charge, and Prof. Edward S. Holden, assistant. Mr. George Anderson is employed in the dome. Since last February, Professor Holden's time has been chiefly occupied with his duties as librarian.

This instrument is now in good order, and is in constant use. The principal work done with it by the astronomers during the year is as follows:

The satellites of Saturn, Japetus, Hyperion, and Titan, were observed by Professor Hall until December 24, 1878. The inner satellite, Mimas, was also observed by Professor Holden on eleven nights, and by Professor Hall on four nights. We have now accumulated a large number of observations of the three outer satellites of Saturn; and these observations ought to be completely reduced and discussed for the purpose of determining more accurately the orbits of these satellites and the mass of the planet.

A few observations of the satellites of Uranus were made by Professor Holden during the last opposition of this planet.

The principal series of observations with this instrument are the observations of double stars by Professor Hall. The thirty stars selected by Struve for the comparison of micrometrical measurements by various observers, have each been observed eight nights, on an average. It was found best not to make the same number of observations of all the pairs, but to increase this number in the case of the more difficult stars. Fewer observations have been made, consequently, of the pairs where the distances are large and the measurements are easy; while in case of difficult pairs, where the components are close and differ much in magnitude, the number of observations has been increased. This work may now be considered as finished, though it may be necessary to add a few more observations of some of the pairs. In the future, it will probably be best to confine the observations to a few stars of large declinations which can be observed at all hour angles.

In August last, the Naval Observatory was honored by a visit from the distinguished director of the Pulkowa Observatory, Mr. Otto Von Struve, and his son, Mr. Hermann Struve, who came for the purpose of examining our large telescope, with the view of purchasing a still larger one for the Imperial Observatory at Pulkowa. I am happy to say that the performance of our telescope was found satisfactory by so competent and experienced a judge, and that Mr. Struve has ordered a 30-inch objective from Messrs. Alvan Clark & Sons, the makers of our instrument.

#### THE TRANSIT CIRCLE.

This instrument, under the direction of Prof. J. R. Eastman, assisted by Prof. Edgar Frisby, and Assistant Astronomers A. N. Skinner, H. Paul, and H. S. Pritchett, has been employed in observations of—

1. Stars of the American Ephemeris, for clock and instrumental corrections.

2. Sun, moon, major and minor planets.
3. Stars whose occultations were observed in connection with observations of the transit of Venus, in 1874.
4. Standard stars for a catalogue of zone observations.
5. Stars of the British Association Catalogue, between  $120^{\circ} 0'$  and  $131^{\circ} 10' N.$  P. D.
6. Stars used in observations of comets with the 26-inch and 9.6-inch equatorials.
7. Stars used in the determination of latitude by the United States Coast and Geodetic Survey, the Lake Survey, Capt. G. M. Wheeler's Survey, and by Lieut. Commander F. M. Green, in surveys in the West Indies.
8. Stars used by Mr. David Gill, of the Royal Astronomical Society of London, in determining the solar parallax from observations of Mars with the heliometer.

The whole number of observations made with the transit circle since the last annual report is 4,100. Of these observations, 81 were of the sun; 61 of the moon; 130 of the major planets; and 146 of the minor planets.

The annual volume for 1875 has been issued since the last report, and the volume for 1876 is now in press. The work of the transit circle is now being prepared faster than it can be printed with the means furnished.

The transit-circle work for 1877 is nearly finished. The observations of 1878 are nearly all reduced to apparent place; and the reductions of the observations of 1879 are well advanced.

In the reduction of the transit-circle observations efficient assistance has been rendered by Lieut. E. W. Sturdy, U. S. N., from April 30 to October 26, 1878, and by Lieut. E. Longnecker since November 2, 1878.

#### THE 9.6-INCH EQUATORIAL.

This instrument is under the direction of Professor Eastman, who has the same assistants as are on the work with the transit circle.

It has been employed in the observations of comets and occultations and in determining the approximate corrections to the ephemerides of such small planets as are not readily found with the transit circle.

The meteorological department is under the direction of Professor Eastman; and the usual observations, at intervals of *three hours*, beginning at midnight, have been made throughout the year, by the watchmen, Messrs. Hays, Horgan, and Cahill.

The control of the system of wires within the Observatory, connected with the central switch-board, and of the connections with the wires of the Western Union Telegraph Company, is under the direction of the officer in charge of the transit circle; while the immediate charge of all the batteries, wires, and their connections, is confided to Mr. William F. Gardner, the instrument-maker. The connections for astronomical work within the buildings remain substantially the same as during the past year. Outside of the Observatory, this department is responsible for the control, by means of the motor clock, of several clocks in the State War, Navy, and Treasury Departments; for furnishing accurate time signals to the Western Union Telegraph Company, and for dropping the time-ball on the Western Union telegraph-office in New York.

The facilities for controlling the clocks in the departments are now wholly inadequate, and a complete change will soon be made, which, it is hoped, will insure thorough and continuous control.



A change also in the method of transmitting time-signals and of dropping the Washington and New York time-balls is nearly completed, and probably be in operation by the end of October.

#### PHOTOHELIOGRAPHIC AND MISCELLANEOUS WORK.

Prof. William Harkness has been assisted during the year by the following-named gentlemen: Lieut. T. Dix Bolles, from October 16, 1878, the beginning of September, 1879; Lieut. Thomas Perry, from November 9, 1878, till the end of July, 1879; Mr. Joseph A. Rogers, from March 11, 1879, till the present time; and by Master E. F. Qualtrough, from September 22, 1879. The work accomplished is as follows:

The photographs of the late transit of Mercury were examined, and of the whole number it was found that twenty-five of the Cambridge pictures, twenty-three of the Washington pictures, and sixty-four of the Ann Arbor pictures, were sufficiently well defined for measurement.

Accordingly, these one hundred and twelve plates have been read off, but twelve being done in duplicate; and the computations, also in duplicate, have been carried so far as to give for the Cambridge and Washington plates the altitudes and azimuths of the reflected images of the Sun and Mercury. The computations of the Ann Arbor photographs are nearly in the same state of forwardness, but are suspended at present because the reticule-plate used in making the pictures has not yet been returned to this Observatory for the determination of its thickness and refractive index. Tables have also been prepared, giving for each of the three stations, at intervals of five minutes of time, 1st, the corrections in altitude and azimuth for the differential refraction between the centers of the Sun and Mercury; 2d, the position angle, upon the reflected image of the Sun, of the meridian passing through the center of the true sun; and 3d, the differential coefficient of the variations produced in that angle by small changes in the altitude and azimuth of the reflected image of the Sun. About three months' work is yet required to determine from the photographs the final corrections to the right ascension and declination of Mercury.

The observations of Mercury made by Professor Harkness at Austin, Tex., have been completely reduced, and are published in Appendix II of the Washington Observations for 1876. The observations made in connection with the solar eclipse of July 29, 1878, at Creston, Wyo., have also been reduced, but have not yet been put in shape for publication.

The drawings of Mars, made by Professor Harkness during the opposition of 1877, have been transformed from the orthographic to Mercator's projection, and a map of the planet has been constructed. General tables have also been computed, which give directly the areographic latitude and longitude of the center of the disc of Mars and the position angle of its axis, as seen from the earth; the arguments being the geocentric right ascension and north polar distance of the planet. As Mars, for the present year, will not approach so closely to the earth for a long time, it has been thought best to defer the completion of this work until the results of the coming opposition can be embodied in it.

Mr. Joseph A. Rogers has been employed under a special appropriation for experiments in astronomical photography, and has spent most of his time in endeavoring to overcome the uncertainties of the emulsion process. In the prosecution of this work he has prepared about fifty samples of emulsion. Here it may be well to remark that our success

in photographing the total eclipse of the sun of July, 1878, was largely due to the excellence of the emulsion which he furnished; and the future of astronomical photography seems to a great extent dependent upon the emulsion process. Hence the importance of the experiments in which Mr. Rogers is engaged. He has also photographed the sun on every clear day, and has made numerous copies of the negatives of the corona taken during the eclipse mentioned above.

Among the minor work of the year may be mentioned the contouring of the Observatory grounds at intervals of five feet, and the examination, by means of the measuring engine, of two of the micrometer screws belonging to the 26-inch equatorial.

#### THE LIBRARY.

The library was placed in charge of Prof. Edward S. Holden on February 10, 1879. Almost his entire time since that date has been spent on the work connected with it, to the virtual exclusion of astronomical work proper. It is now in a satisfactory condition, and can be maintained in order by a continuance of the present system.

The books have been rearranged and bound, the pamphlets collected and arranged by subjects, and the meteorological periodicals found, sorted and made available for consultation.

A card catalogue has been begun, and over 4,000 cards made. Part I of the catalogue of the library, "Astronomical Bibliography," will be printed in 1879.

A complete index to the publications of the Observatory from 1845 to 1875 has been made. It will be printed as Appendix I to the Observations for 1876. At intervals of ten years, similar indexes should be made.

Over 8,500 volumes of our publications have been distributed in the eight months and a half since February; that is about 1,000 per month, or 39 per working day, on the average. The arrears have been completely brought up.

The distribution of these volumes in the United States is done under the frank of the department; in foreign countries, through the agents of the Smithsonian Institution. A sum of \$113.85 has been asked for in the estimates to repay the Smithsonian Institution for transportation expenses already incurred.

The usual annual appropriation of \$1,000, for the purchase and care of astronomical works, should be continued.

In this connection, it may be said that our library is now the best astronomical library in the United States, and is constantly appealed to by persons not connected with the Observatory. It is highly desirable that it should be still further increased, and that this valuable collection, which, if destroyed, could hardly be replaced, should be safely lodged in a fire-proof room.

#### CHRONOMETERS.

There are at the present time in the chronometer-room one hundred and ten mean-time chronometers; twenty are ready for issue, twenty-six are on trial, and sixty-eight need repairs. There is also one sidereal chronometer.

Messrs. Negus, of New York, have in their hands twenty-eight chronometers for cleaning and repairs.

Fifty-seven chronometers have been received during the year, and seventy-four have been issued; of these, twenty-eight have been issued to vessels of the Navy and thirty-six sent to Messrs. Negus for repairs.



There are also ninety-five condemned chronometers stored away, and the best of these are kept in repair to be used as "backs." The thirteen chronometers captured on the steamer Florida are stored away in the chronometer-room.

Three gold comparing watches and five silver watches are on hand, of which are out of repair.

A time-ball on the tower of the Western Union Telegraph Company's building, in New York City, is dropped daily at New York noon (except Sunday), from the chronometer-room.

During the year this ball has failed to drop eight times—three, because wires were out of order at New York; once, on account of the wire insulation here having been destroyed by lightning; three times here, because of the mean-time clock having stopped, and the changing of wires while putting in new instruments and telephones; and once, for which no cause could be found for its not working.

At Washington, noon, a time-ball is dropped from the staff on the dome of the Observatory, and time signals are transmitted to all parts of the United States.

The following paper, by Prof. Simon Newcomb, secretary of the Trans-Atlantic Venus Commission, and charged with the preparation of the report, is herewith appended.

NAUTICAL ALMANAC OFFICE,  
NAVY DEPARTMENT,  
*Washington, D. C., October 13, 1879.*

DEAR SIR: In compliance with your request of October 9, I beg leave to report that the reductions of the transit of Venus work are in the following state:

Part I, containing a general discussion of the observations, so far as deduce equations of condition from them, is ready for the press, except a few touches here and there, some of which it may be desirable to have acted on by the entire commission.

Part II, containing the reports of the observers and the observations made at the several stations, is also nearly ready, so far as I have the material. The observations at four of the stations were reduced by the observers themselves, and are therefore not completely in my possession, while those which are, need some modifications.

Part III, containing the discussion of the longitudes of the stations, from occultations and other sources, is still incomplete, and requires some examination from me, which I shall be unable to give it for two or three months to come. The reduction of the chronometer observations for longitude is in the hands of Professor Harkness; I am, therefore, unable to report upon their progress.

Part IV, which should contain the photographic plate measures, is also in the hands of Professor Harkness.

Very respectfully, your obedient servant,

SIMON NEWCOMB,  
*Superintendent Nautical Almanac.*

Rear-Admiral JOHN RODGERS,  
*Superintendent Naval Observatory, Washington, D. C.*

I have the honor to be, very respectfully, your obedient servant,  
JOHN RODGERS,  
*Rear-Admiral, Superintendent.*

Commodore WILLIAM D. WHITING, U. S. N.,  
*Chief of the Bureau of Navigation, Navy Department.*



NAUTICAL ALMANAC OFFICE,  
BUREAU OF NAVIGATION,  
Washington, D. C., October 18, 1879.

SIR: I have the honor to submit the following report of the operations of this office during the past year:

The American Nautical Almanac for the year 1882, containing that portion of the Ephemeris necessary for navigators, was issued in July last. The large Ephemeris for 1882 has been delayed by the numerous alterations made in the work, but is now ready for the press. Of the Ephemeris for 1883, 75 pages are now in type and the printing is progressing favorably.

During the fiscal year ending June 30, 1879, 368 copies of the large Ephemeris were sold and 751 copies were distributed for the public service and for scientific and educational purposes. Of the Navigators' Almanac 3,210 copies were sold.

In this connection I would respectfully ask the attention of the Bureau to the great inconvenience which has resulted during the past two years from the inability of the Department to print copies of the American Nautical Almanac at the times when they are required by merchant ships. By having issued this necessary manual for more than a quarter of a century, and by having made such arrangements that it has nearly superseded all others in the market, it might be reasonably claimed that the government has assumed the obligation of not allowing it to get out of print while wanted by ships going to sea. But under present arrangements there is annually a period of from one to three months during which this office is unable to supply the demand. The subject is, therefore, submitted for such action as the Bureau may deem proper under the circumstances.

#### SYSTEM OF COMPUTATION.

The plan has been adopted of devoting the appropriation for each fiscal year to the preparation of a special volume of the Ephemeris to be printed during the fiscal year following. The arrangement is such that the computations of the Ephemeris for the year 1884 shall be completed with the appropriation for the year ending June 30, 1880, and that the Ephemeris itself shall be printed during the year following, so as to be ready for issue by June, 1881. The ephemeris of the sun, and a portion of that of the moon, has to be prepared a year in advance of the rest of the Ephemeris, being needed in computing the latter.

Under the system heretofore adopted in the preparation of the Ephemeris two-thirds of the computations are made in various parts of the country by college professors and mathematicians having other vocations. In the case of the more complex computations, especially those of the planets, this system is subject to several inconveniences and renders it extremely difficult for this office to exercise the proper control over the accuracy of the work. I am, therefore, of opinion that the efficiency of the office will be promoted by having all the planetary ephemerides prepared by a single expert computer under its immediate direction.

#### IMPROVEMENT OF THE TABLES.

Besides the regular routine of preparing and issuing the two Ephemerides, progress has been made in the several investigations for improving the astronomical tables referred to in my last annual report.

Mr. Hill's work on the motions of Jupiter and Saturn has proved

re laborious than was expected; but I still anticipate its completion during the year 1880.

The general catalogue of all the stars used in the preparation of the *hemeris* is nearly completed by Master Chauncey Thomas, United States Navy, with aid from the other naval officers attached to the office.

The tabular times of eclipses of Jupiter's first satellite from 1668 to 1855 have been computed from Damoiseau's tables, with a view of comparing them with observations.

Tables of solar eclipses for the easy and rapid computation of the eclipses of the sun during the historic period have been prepared and used during the year.

It is desirable to prepare and issue all investigations of this class in detached completed parts, in order that the mass of unfinished work may always be as small as possible. I anticipate that the office work on them will now be conducted with as much regularity as is possible under the circumstances, and respectfully submit to the Department the suggestion of providing for their regular printing.

Very respectfully, your obedient servant,

SIMON NEWCOMB,  
*Professor, United States Navy,  
Superintendent Nautical Almanac.*

Commodore WILLIAM D. WHITING, U. S. N.,  
*Chief Bureau Navigation, Navy Department.*

## No. 6.—BUREAU OF YARDS AND DOCKS.

BUREAU OF YARDS AND DOCKS,  
NAVY DEPARTMENT,  
*Washington, D. C., October 23, 1879.*

SIR: In compliance with your order of the 3d instant, I have the honor to submit herewith my annual report for the fiscal year ending 30th June, 1879, and estimates for the fiscal year ending 30th June, 1881, together with an abstract of offers for supplies coming under the cognizance of the Bureau of Yards and Docks for the fiscal year ending 30th June, 1879.

I am, with great respect, your obedient servant,

R. L. LAW,  
*Chief of Bureau.*

Hon. R. W. THOMPSON,  
*Secretary of the Navy, Washington, D. C.*

BUREAU OF YARDS AND DOCKS,  
NAVY DEPARTMENT,  
*Washington, D. C., October 23, 1879.*

SIR: In obedience to your order of the 3d instant, I have the honor to submit the annual report of this bureau and the expenditures for the fiscal year ending June 30, 1879.

I also submit estimates for the fiscal year ending June 30, 1881. These estimates have been carefully revised, and are considered as low as the wants of the bureau require.

The intention of the bureau is to build and repair chiefly for immediate wants, yet looking to the requirements of the future. In building, the object should always look to permanency. Wooden buildings are not suitable or economical in navy-yards, and invariably entail a cost far beyond what good brick or stone structures would cost, to say nothing of the danger from fire.

In the last fiscal year no special appropriations were made except \$75,000 for stone dry-dock at Mare Island and \$20,000 for repair of ropewalk at Boston. These sums have been expended very economically. Much work has been done on the dry-dock considering the small amount appropriated for its continuance, although a large portion of the appropriation has been spent in purchasing materials.

The ropewalk at Boston has been repaired for the sum appropriated, and this important structure, it is thought, will last for many years to come.

The amount appropriated for "repairs and preservation," though judiciously and frugally expended, has proved inadequate to the wants and requirements of the several navy-yards and stations.

The store and ship houses, workshops, docks, &c., are going to decay for the want of means to preserve them.

The bureau has only been able to make temporary repairs in most cases, and when it is considered there are over three hundred buildings, most of which are large and very costly, and in addition to these the wharves and docks, requiring more or less repairs every season, it becomes apparent that the amount appropriated is insufficient. Every rain-storm and gale of wind calls for further expenditure, and the result is that the means allotted are frittered away, whereas were ample funds provided much could be saved.

The remarks under the heads of the various yards and stations will inform you in detail of their condition and wants.

#### PORTSMOUTH, N. H.

The work at this yard has been confined to preservation; no new works or extensive repairs have been undertaken except that of the dry-dock. An examination showed that it required a thorough overhauling to make it serviceable. A quantity of decayed timber has been removed and replaced with new, and the dock calked inside and out and repainted.

In carrying on this work the dock has been always ready for service, and the great expense incurred has absorbed so large a portion of the means appropriated for general repairs, that the bureau has been unable to do other necessary work.

Some old wooden sheds, causing constant apprehension of fire, have been removed, but this leaves valuable material exposed to the weather.

I submit estimates for the following objects of improvements at this navy-yard, viz:

For foundry for steam engineering .....	\$17,462 25
For smithery for steam engineering .....	7,926 25
For water works .....	7,000 00
Total estimate .....	32,388 47

#### BOSTON, MASS.

For this yard an especial appropriation was made for repairing the ropewalk. The work has been well done, and the walk is in good condition, and will be serviceable for many years to come.



The other repairs have consisted in keeping the roofs, gutters, &c., of the yard buildings in order. In this, as in many of the yards, there are small wooden sheds and shops inviting fire and destruction to property of great value. Several of these have been removed, but it is necessary for the interests of the service that proper buildings be erected ere the remainder are torn down.

The present caisson and gates of the dry-dock have been in use for over forty-six years, and need renewing; the gates are deteriorated beyond use, and the caisson nearly so. As the use of the dry-dock depends upon these adjuncts, I recommend a small appropriation for the renewal of the same.

I submit estimates for the following objects of improvements at this navy-yard, viz:

For yards and docks workshop.....	\$40,000
For paving and grading.....	10,000
For cart-shed.....	7,000
For new gate for dry-dock.....	30,000
Total estimate .....	87,000

#### NEW LONDON, CONN.

At this station no repairs of moment have been made. The buildings have been repaired as required.

I submit the following estimate, viz:

For grading.....	\$5,000
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#### SACKET'S HARBOR, N. Y.

At this station there is a ship-house with the frame of a line-battle-ship in it; both are decaying and falling to pieces. During a heavy gale lately a part of the roof of the building was blown in, and the rest may be expected to follow during the coming winter. Should the department propose to repair the building, a survey should be held immediately and the work executed as soon as possible.

#### BROOKLYN N. Y.

The estimates for this yard are for purposes that are considered of great moment.

The timber-shed would save its cost in a few years.

The estimate for the yard wall is heartily approved, and will save cost, labor, and material far beyond the expense. The same may be said of the estimate for a coal depot.

The improvements in this yard, with the limited means supplied, show attention and care on the part of the officers in charge in the disbursement of the funds greatly to their credit.

I submit estimates for the following objects of improvement at this yard, viz:

For shipwrights' shed and oakum store.....	\$10,000
For timber-shed.....	5,000
For yard wall, Flushing and Washington avenues.....	5,000
For coal depot.....	20,000
Total estimate .....	40,000

#### LEAGUE ISLAND, PA.

The storm of October 17, 1878, caused great damage at this station. The dykes at various places, amounting in all to about 1,400 feet in

length, were washed away, and the whole island, except a small portion filled in for roadways and buildings, was submerged to the depth of to 7 feet. A large quantity of material was swept away and the lives of the employes seriously exposed.

As there were no funds to repair the dyke, beyond the amount granted for repairs of all the yards, the bureau was obliged to refuse almost absolute necessities to other yards, in order to rescue League Island; though taking freely from the funds allotted to other yards, the bureau has been unable to do more than repair the dykes temporarily.

The estimate submitted for further improvement is very small considering the work to be done to make the place perfectly secure.

Further estimates for improvements are submitted for absolute necessities if the yard is to be utilized.

I submit estimates for the following objects of improvement at this yard, viz:

For foundry for steam-engineering .....	\$30,000
For dredging and filling in .....	75,000
For grading, graveling, &c.....	5,000
For improvement of dykes.....	60,000
For masting sheers.....	12,000
For finishing docking apparatus and mold loft.....	10,000

Total estimate ..... 192,000

#### WASHINGTON, D. C.

The work in this yard has consisted of repairs and improvements of officers' quarters, workshops, wharves, roads, &c. You will observe that no special appropriation is suggested by the commandant except for the purchase of a lot near the western boundary of the yard, the purchase of which will add greatly to the accommodations in that quarter.

The bureau commends this yard for its good order, efficiency, and very marked economy in the expenditures.

Your attention is respectfully called to the importance of improving the Eastern Branch of the Potomac. Several thousand dollars have been appropriated in the last two years for deepening the Potomac from Georgetown down to near Alexandria, but not a dollar for the Eastern Branch. Each year adds to the labor, danger, and expense of getting ships of very moderate draught to and from the yard. It is suggested that piles be placed above Uniontown Bridge to deflect and narrow the current so that the increased velocity will deepen and keep an open deep channel to the Potomac proper.

The bureau advances no opinion as to whether the channel should be deepened by dredging or as above noted.

I submit the following estimate for this yard, viz:

For purchase of square No. 853..... \$12,604

#### NORFOLK, VA.

Owing to the heavy gale of wind and rain at this place in August last, great damage was done to the buildings, wharves, roadways, &c. An extraordinary expenditure of about \$12,000 was required to repair the dilapidation. The damage sustained has not yet been made good; the means allowed have been expended with great care, and in a few days it is supposed the yard will be in fair order.

During the year ending June 30, 1879, repairs have been made on buildings, wharves, roadways, &c., as required. The allotment to this yard is too small to allow extensive work, even in repairs.



This yard, situated in a climate that permits work the entire year, in a harbor that can be entered by our heaviest-draught ships, with easy access by rail and water to our great coal and iron mines, calls for special attention of Congress as a naval station.

submit estimate for the following objects of improvement, viz:

timber-shed No. 32 .....	\$40,925 26
timber-shed No. 33 .....	40,925 26
coal-house No. 54 .....	30,000 00
two cisterns .....	9,485 00
chain and cordage store No. 63 .....	5,000 00
Total estimate .....	126,335 52

#### PENSACOLA, FLA.

At this yard no work has been done beyond keeping wharves, bridges, and buildings in repair. Estimates for necessary improvements are herewith submitted:

timber-shed No. 11 .....	\$28,590 03
spar and cooper-shop No. 38 .....	38,030 79
Total estimate .....	66,620 82

#### MARE ISLAND, CAL.

As the bureau was confined to the usual appropriations for repairs, no work has been undertaken at this yard. The special appropriation of \$5,000, for dry-dock was expended with very marked advance in the work. I beg leave to renew my observations as to the great and pressing necessity of such a sum being appropriated as will permit the entrance to the dock to be advanced beyond the danger that arises from the wooden coffer-dam giving way, the liability of such disaster increasing daily.

The floating dry-dock is a source of constant care and expense. The bureau was called upon for \$45,000 during the year for repairing the same, and to procure the means in part to meet this emergency the bureau has been compelled to omit necessary repairs at other yards. At present writing the bureau has authorized the expenditure of \$5,000 for commencing repairs on this dock, and either the dock must be given up or means taken from other funds to complete the repairs.

Estimates submitted are deemed necessary for keeping the yard in a proper state to repair the naval ships in the Pacific Station.

submit estimates for the following objects of improvement at this yard, viz:

continuation of stone dry-dock .....	\$400,000 00
roads and pavements (stone) .....	10,000 00
renewing plank-road .....	1,000 00
extension of timber-shed No. 94 .....	10,000 00
Total estimate .....	421,000 00

#### KEY WEST, FLA.

At this station during the past fiscal year slight necessary repairs have been made to the buildings and shops, and the wharf almost entirely renewed.

I submit estimates for the following objects of improvement at station, viz :

For sea-wall and filling in front of storehouse .....	\$7, 00
For commencing permanent bulkhead of concrete .....	5, 00
For erection of double house for officers' quarters .....	4, 00
<b>Total .....</b>	<b>16, 00</b>

#### NAVAL ASYLUM, PHILADELPHIA, PA.

On the 1st July, 1878, there were 13 officers, 29 attendants, and beneficiaries on the rolls of the asylum.

During the fiscal year ending 30th June, 1879, 36 beneficiaries have been admitted, 10 have died, 6 have been dismissed for misconduct and 2 were discharged at their own request.

Under the administration of the present able governor this institution has been kept in admirable condition, and everything has been done to render the condition of the beneficiaries as comfortable as possible.

The expenditures during the fiscal year ending 30th June, 1879, have been—

For pay and pocket-money of beneficiaries .....	\$3, 30
For tobacco .....	1, 20
For clothing, boots and shoes .....	7, 40
For subsistence .....	16, 20
For paints, dry goods, lumber, coal, wood, provender, hardware, miscellaneous, and house sundries .....	6, 80
For pay of employés .....	7, 80
For repairs and preservation of all kinds .....	4, 40
For water rent and gas .....	1, 70
For cemetery and burial expenses .....	3, 00
For improvement of grounds .....	4, 00
For car tickets .....	0, 00
For ice .....	10, 00
<b>Total .....</b>	<b>50, 20</b>

Estimates have been submitted by the governor of the institution for its support during the fiscal year ending 30th June, 1881, amounting to the aggregate to \$79,465.

Accompanying this report is an abstract of offers for supplies received for furnishing articles coming under the cognizance of the Bureau of Yards and Docks, made in conformity to act of Congress approved March 3, 1843.

By direction of the department I respectfully submit the following estimates for the fiscal year ending 30th June, 1881:

Sheet No. 1. For support of Bureau of Yards and Docks .....	\$12, 50
Sheet No. 2. General maintenance of yards and docks and contingent .....	460, 00
Sheet No. 3. Support of Naval Asylum .....	59, 30
Sheet No. 4. Repairs and preservation of navy-yards .....	300, 00
Sheet No. 5. Improvements at navy-yards .....	75, 00
Sheet No. 6. Civil establishment .....	42, 80

**Total estimates .....** 949, 60

I am, very respectfully, your obedient servant,

R. L. LAW,  
Chief of Bureau

Hon. R. W. THOMPSON,  
Secretary of the Navy, Navy Department, Washington, D.C.

## No. 7.—BUREAU OF PROVISIONS AND CLOTHING.

BUREAU OF PROVISIONS AND CLOTHING,  
October 30, 1879.

SIR: I have the honor to submit herewith, in accordance with your instructions of the 3d instant, estimates marked A, B, C, D, and E, for the fiscal year ending June 30, 1881, together with schedules numbered 1 to 6, inclusive, and statement No. 7, pertaining to the operations of this bureau during the year ending June 30, 1879.

Since my last report there has been established at the inspection, navy-yard, Brooklyn, a system for finishing and cutting clothing material, and making garments of the present patterns for the naval service. A room, with the necessary machinery, has been completed, and the making of the garments is being done by worthy and needy men, so many of whom are found in the vicinity of our large cities.

The clothing is issued on board vessels at its actual cost, and when the stock on hand, of material purchased at high prices, is exhausted, clothing can be cut and made at a less rate than could be obtained by the contract system, besides being of better workmanship and more correct in accordance with the prescribed uniform.

By the establishment of this system, which has already proved a success, but a very small stock of made-up clothing need be kept on hand, thereby saving the government great loss in deterioration and destruction of such perishable matter.

The new labor now being performed in the manufacture of clothing at the navy-yard, New York, necessitates the employment of an additional laborer, for the payment of whom the amount of \$1,017.25 is included in the accompanying estimates.

Respectfully,

GEO. F. CUTTER,  
Paymaster-General, U. S. N.

Hon. R. W. THOMPSON,  
Secretary of the Navy.

*Schedule of proposals for fresh provisions, navy bread, baking, and water, received during the fiscal year ending June 30, 1879, the supplies to be delivered during the fiscal year 1879-80.*

Name.	Where to be delivered.	Fresh bread.	Fresh beef.	Vegetables.	Navy bread.	Baking.	Water.
		Per pound.	Per pound.	Per pound.	Per pound.	Per bbl. of flour.	Per 100 gallons.
Brown	Portsmouth, N. H.	\$0 06	\$0 06½	\$0 01½			
Chase	do		06½	01½			
W. Higgins	Boston, Mass.		10	01½			
Hobbs	do		11	01½			
Stevens	do		10½	02½			
Anders	do		11½	02			
Austin & Co.	do	06				\$1 75	
Threawesert	New York, N. Y.		06½	01			
Sanley	do		11½	02½			
Hillom	do		06½	01			
Evins	do		12½	04			
Harrison	do		12½	04			
Mad Mess	do		12½	04½			
Aggyl	do	03					
Min	do	06½					
Irms	do	06½					
Abbit	do	03½					
asent	do	02½					
eNamara	do	06					
Goodwin & Sons	do					94½	
readwell & Sons	do					95	
Ivins & Son	League Island, Pa.					1 44	
man & Bro.	do					1 39	



4.—Schedule of proposals for canned stores, received during the fiscal year ending June 30, 1879.

Name.	Date of proposals.	Where to be delivered.	Butter.		Preserved beef.		Evaporated apples.		Compressed corned beef.	
			Amount.	Per lb.	Amount.	Per lb.	Amount.	Per lb.	Amount.	Per lb.
H. K. & F. B. Thurber & Co*.....	Sept. 4, 1878	New York	800 pounds, in 1-pound tins.	\$0 25½						
		do	3,200 pounds, in 2-pound tins.	27½						
		Boston	400 pounds, in 1-pound tins.	24½						
		do	1,600 pounds, in 2-pound tins.	27½						
		do	480 pounds, in 2-pound tins.	31						
Simpson, McIntire & Co*.....	Dec. 24, 1878	do	2,020 pounds, in 2-pound tins.	30						
		New York	1,056 pounds, in 2-pound tins.	31						
		do	4,944 pounds, in 2-pound tins.	30						
		Norfolk	864 pounds, in 2-pound tins.	31						
		do	4,136 pounds, in 2-pound tins.	30						
Libby, McNeill & Libby W. K. Lewis & Bros* Barnham & Morrill J. W. Jones M. P. Smith Libby, McNeill & Libby* Simpson, McIntire & Co* J. W. Jones* Simpson, McIntire & Co*.....	Jan. 2, 1879	New York			100,000 lbs.	\$0 12½ 11½ 14 12	10,000 lbs.	\$0 16	10,000 lbs.	\$0 13½
		do								
		do								
		do								
		do								
Simpson, McIntire & Co*.....	June 24, 1879	do								
		do								
		do								
		do								
		do								

\* Contract awarded.

Schedule of proposals for tobacco, received during the fiscal year ending June 30, 1879.

Name.	Receipt of proposals.	Amount required.	Price per pound.
		Pounds.	
Hillard & Co.....	Sept. 10, 1878	60,000	\$0 48½
Mayo & Brother.....			48½
Man & Drummond.....			54
Mayo & Brother.....	Mar. 18, 1879	20,000	48½
Spicer.....			38½
Mayo & Brother.....	June 25, 1879	00,000	40½

\* Contract awarded.

Schedule of proposals for seven sets of stationery, received during the fiscal year ending June 30, 1879.

Name.	Where to be delivered.	Total price.
Sam H. Dempsey.....	Washington, D. C.....	\$437 50
Sam Ballantyne & Son*.....	do.....	370 00

\* Contract awarded.

Statement of contracts made by the Bureau of Provisions and Clothing for and in behalf of the Navy Department, during the fiscal year ending June 30, 1879.

Name.	Date.	Articles contracted for.	Price.	Where to be delivered.
	1873.			
Bell.....	July 1	Fresh beef..... per lb.	\$0 07	Pensacola, Fla.
Do.....	July 1	Vegetables..... do.	03	Do.
Brown.....	July 6	Fresh bread..... do.	04½	Mare Island, Cal.
Tobin.....	July 6	Fresh beef..... do.	08	Do.
Do.....	July 6	Vegetables..... do.	03½	Do.
Ornia Cracker Com- y.....	July 8	Navy bread..... do.	03½	Do.
Maclin.....	July 8	Navy bread..... do.	07	Key West, Fla.
Philbrick.....	July 29	Fresh beef..... do.	11	Do.
Do.....	July 29	Vegetables..... do.	05	Do.
Behrenbach & Co. & F. B. Thurber &	Aug. 24	Pickles..... do.	06½	New York, N. Y.
Do.....	Sept. 9	Butter, 800 lbs. in 1-lb. tins..... do.	28½	Do.
Do.....	Sept. 9	Butter, 3,200 lbs. in 2-lb. tins..... do.	27½	Do.
Do.....	Sept. 9	Butter, 400 lbs. in 1-lb. tins..... do.	28½	Boston, Mass.
Do.....	Sept. 9	Butter, 1,600 lbs. in 2-lb. tins..... do.	27½	Do.
Mayo & Bro.....	Sept. 18	Tobacco, 60,000 lbs..... do.	48½	New York, N. Y.
Sam Mathews.....	Sept. 19	Boys' undershirts, 500..... each.	1 44	Do.
& C. B. Alling.....	Sept. 23	Woolen socks, 500 pairs..... per pair.	31½	Do.
Pipsey.....	Sept. 26	Working suits, 3,000..... each.	1 22	Do.
Woolen Mills pany.....	Oct. 4	Men's flannel drawers, 5,000..... per pair.	1 48	Do.
Do.....	Oct. 4	Boys' flannel drawers, 500..... do.	1 34	Do.
re H. Creed.....	Oct. 7	Barnsley sheeting, 5,000 yds..... per yard.	68½	Do.
Sam Mathews.....	Dec. 24	Thin blue flannel, 10,000 yds..... do.	32½	Do.
son, McIntire & Co	Dec. 26	Butter, 480 lbs. in 3-lb. tins..... per lb.	31	Boston, Mass.
Do.....	Dec. 26	Butter, 2,020 lbs. in 7-lb. tins..... do.	30	Do.
Do.....	Dec. 26	Butter, 1,056 lbs. in 3-lb. tins..... do.	31	New York, N. Y.
Do.....	Dec. 26	Butter, 4,944 lbs. in 7-lb. tins..... do.	30	Do.
Do.....	Dec. 26	Butter, 864 lbs. in 3-lb. tins..... do.	31	Norfolk, Va.
Do.....	Dec. 26	Butter, 4,136 lbs. in 7-lb. tins..... do.	30	Do.
	1879.			
Behrenbach & Co..	Jan. 6	Pickles, 20,000 lbs..... do.	07	Do.
Smith.....	Jan. 8	Evaporated apples, 10,000 lbs..... do.	16	Do.
& Fabel.....	Jan. 10	Beans, 10,000 gals..... per gal.	18½	New York, N. Y.
Sam Mathews.....	Jan. 11	Beef, 500 bbls..... per bbl.	13 67	Do.
Do.....	Jan. 11	Pork, 500 bbls..... do.	10 47	Do.
Do.....	Jan. 11	Vinegar, 3,000 gals..... per gal.	19½	Do.
Do.....	Jan. 11	Beans, 7,000 gals..... do.	21½	Norfolk, Va.
Do.....	Jan. 11	Vinegar, 3,000 gals..... do.	20½	Do.
Do.....	Jan. 11	Sugar, 50,000 lbs..... per lb.	07½	Do.



## 7.—Statement of contracts made by the Bureau of Provisions and Clothing, &amp;c.—Continued

Name.	Date.	Articles contracted for.	Price.	Where to be delivered.
	1878.			
H. K. & F. B. Thurber & Co.	Jan. 12	Rice, 20,000 lbs.....per lb.	\$0 07 <sup>35</sup>	New York, N. Y.
Do.....	Jan. 12	Molasses, 2,000 gals.....per gal.	33	Do.
Do.....	Jan. 12	Rice, 15,000 lbs.....per lb.	07 <sup>35</sup>	Norfolk, Va.
Do.....	Jan. 12	Molasses, 3,000 gals.....per gal.	34	Do.
R. M. Masterton	Jan. 13	Coffee, 60,000 lbs.....per lb.	15 <sup>35</sup>	New York, N. Y.
W. K. Lewis & Bros.	Jan. 15	Preserved beef, 100,000 lbs.....do..	11 <sup>35</sup>	Do.
Libby, McNeill & Libby	Feb. 17	Compressed corned beef, 10,000 lbs.do..	13 <sup>35</sup>	Do.
B. Y. Pipey	Feb. 24	Mattresses, 2,000.....each.	4 22	Do.
P. H. Mayo & Bro	Mar. 18	Tobacco, 20,000 lbs.....per lb.	48 <sup>3</sup>	Do.
Simpson, McIntire & Co	May 14	Butter, 10,000 lbs. in 7-lb. tins.....do..	28	Do.
John Hanley	May 22	Fresh beef.....do..	11 <sup>3</sup>	Do.
Do.....	May 22	Vegetables.....do..	02 <sup>3</sup>	Do.
J. McNamara	May 22	Fresh bread.....do..	06	Do.
C. T. Goodwin & Sons	May 23	Baking bread.....per bbl. of flour.	94 <sup>3</sup>	Do.
James Reid & Co	May 29	Baking bread.....do..	1 23	Norfolk, Va.
S. Westheimer	May 29	Fresh beef.....per lb.	05 <sup>35</sup>	Do.
Do.....	May 29	Vegetables.....do..	01 <sup>3</sup>	Do.
William Clark	May 30	Fresh water.....per 100 gals.	14 <sup>3</sup>	Do.
Do.....	May 30	Fresh water.....do..	20	Hampton Roads.
I. S. Ivins & Son	June 3	Baking bread.....per bbl. of flour.	1 44	League Island.
C. F. Austin & Co	June 4	Baking bread.....do..	1 75	Boston, Mass.
Do.....	June 4	Fresh bread.....per lb.	06	Do.
Snow & Higgins	June 4	Fresh beef.....do..	10	Do.
Do.....	June 4	Vegetables.....do..	01 <sup>3</sup>	Do.
James Murphy	June 7	Fresh beef.....do..	06 <sup>3</sup>	Pensacola, Fla.
Do.....	June 7	Vegetables.....do..	02 <sup>3</sup>	Do.
Moses White	June 7	Fresh bread.....do..	07	Do.
J. O'Neal	June 7	Navy bread.....do..	05	Do.
L. S. Boraef	June 9	Fresh bread.....do..	04 <sup>3</sup>	League Island.
J. Corney	June 9	Fresh beef.....do..	09 <sup>35</sup>	Do.
Do.....	June 9	Vegetables.....do..	03	Do.
George Seitz & Son	June 11	Fresh bread.....do..	03 <sup>35</sup>	Washington, D.
J. D. Mason & Co	June 12	Baking bread.....per bbl. of flour.	1 09	Do.
Kimberly Brothers	June 14	Fresh bread.....per lb.	03 <sup>35</sup>	Norfolk, Va.
J. F. Tobin	June 14	Fresh beef.....do..	07 <sup>35</sup>	Mare Island, Ca.
Do.....	June 14	Vegetables.....do..	03 <sup>3</sup>	Do.
C. L. Brown	June 14	Fresh beef.....do..	06 <sup>3</sup>	Portsmouth, N.
Do.....	June 14	Vegetables.....do..	01 <sup>3</sup>	Do.
Do.....	June 14	Fresh bread.....do..	06	Do.
John Faust	June 16	Fresh bread.....do..	03 <sup>3</sup>	Mare Island, Ca.
Benjamin Burr	June 19	Fresh beef.....do..	14	Port Royal, S. C.
Do.....	June 19	Vegetables.....do..	03	Do.
George W. Maslin	June 19	Navy bread.....do..	07	Key West, Fla.
M. H. Homiller	June 19	Fresh beef.....do..	03 <sup>35</sup>	Washington, D.
Do.....	June 19	Vegetables.....do..	01 <sup>3</sup>	Do.
James Odell	June 19	Fresh bread.....do..	06 <sup>3</sup>	Port Royal, S. C.
J. C. Mayo	June 21	Fresh water.....per gal.	01 <sup>3</sup>	Do.
J. W. Jones	June 25	Preserved beef, 100,000 lbs.....per lb.	15	New York, N. Y.
C. W. Spicer	June 28	Tobacco, 60,000 lbs.....do..	38 <sup>35</sup>	Do.
Simpson, McIntire & Co	June 28	Butter, 15,000 lbs. in 3-lb. tins.....do..	30	Do.

NOTE.—Fresh beef and vegetables, bread, and water to be delivered during the fiscal year in quantities as required.

*Estimates of appropriations required for the service of the fiscal year ending June 30, 1881,  
by the Bureau of Provisions and Clothing.*

Detailed objects of expenditure, and explanations.	Estimated amount which will be required for each detailed object of expenditure.	Total amount to be appropriated under each head of appropriation.	Amount appropriated for the current fiscal year ending June 30, 1880.
<b>A.—EXPENSES OF THE BUREAU OF PROVISIONS AND CLOTHING.</b>			
or salary of chief clerk, per act July 5, 1862 (12 Stat. at L., p. 511, sec. 3) .....	\$1,800 00		
or salary of one clerk of class four, per act July 23, 1866 (14 Stat. at L., p. 208, sec. 8) .....	1,800 00		
or salary of two clerks of class three, per act July 23, 1866 (14 Stat. at L., p. 208, sec. 8) .....	3,200 00		
or salary of two clerks of class two, per act July 23, 1866 (14 Stat. at L., p. 208, sec. 8) .....	2,800 00		
or salary of three clerks of class one, per act July 23, 1866 (14 Stat. at L., p. 208, sec. 8) .....	3,600 00		
or salary of messenger, per act June 21, 1879 (pamphlet edition Stat. at L., p. 23) .....	720 00		
or salary of one laborer, per act June 21, 1879 (pamphlet edition Stat. at L., p. 23) .....	660 00		
		\$14,580 00	\$14,580 00
<b>B.—CONTINGENT EXPENSES OF THE BUREAU.</b>			
or blank books, stationery, and miscellaneous items, per act June 21, 1879 (pamphlet edition Stat. at L., p. 23) .....		400 00	400 00
<b>C.—PROVISIONS FOR THE NAVY.</b>			
or provisions and commutation of rations for 1,200 officers, 7,500 men, and 1,000 marines; expenses of inspections and storehouses; the handling and transportation of provisions; and for water for ships, per act February 14, 1879 (pamphlet edition Stat. at L., p. 288) .....		1,200,000 00	1,025,000 00
or provisions and commutation of rations for 750 boys, per act May 12, 1879 (pamphlet edition Stat. at L., p. 3) .....		82,125 00	
<b>D.—CONTINGENT EXPENSES OF THE NAVY UNDER THE BUREAU OF PROVISIONS AND CLOTHING.</b>			
or freight on shipments (except provisions), candles, fuel, books and blanks, stationery, advertising, commissions on sales, foreign postage, telegrams, express charges, tolls, ferriage, car-tickets, yeomen's stores, iron safes, newspapers, ice, and other expenses not enumerated, per act February 14, 1879 (pamphlet edition Stat. at L., p. 288) .....		60,000 00	60,000 00
<b>E.—CIVIL ESTABLISHMENT BUREAU OF PROVISIONS AND CLOTHING.</b>			
<b>Navy-yard, Boston, Mass.:</b>			
One writer to paymaster, per act February 14, 1879 (pamphlet edition Stat. at L., p. 288) .....	1,017 25		
One writer to inspector, per act February 14, 1879 (pamphlet edition Stat. at L., p. 288) .....	1,017 25		
<b>Navy-yard, New York, N. Y.:</b>			
One writer to inspector, per act February 14, 1879 (pamphlet edition Stat. at L., p. 288) .....	1,017 25		
One writer to paymaster, per act February 14, 1879 (pamphlet edition Stat. at L., p. 288) .....	1,017 25		
One writer to paymaster, per act February 14, 1879 (pamphlet edition Stat. at L., p. 288) .....	939 00		
One writer in clothing and manufacturing room (new work), submitted .....	1,017 25		
<b>Navy-yard, League Island, Pa.:</b>			
One writer to paymaster, per act February 14, 1879 (pamphlet edition Stat. at L., p. 288) .....	1,017 25		
<b>Navy-yard, Washington, D. C.:</b>			
One writer to paymaster, per act February 14, 1879 (pamphlet edition Stat. at L., p. 288) .....	1,300 00		
<b>Navy-yard, Norfolk, Va.:</b>			
One writer to paymaster, per act February 14, 1879 (pamphlet edition Stat. at L., p. 288) .....	1,017 25		
One writer to inspector, per act February 14, 1879 (pamphlet edition Stat. at L., p. 288) .....	1,017 25		
<b>Navy-yard, Mare Island, Cal.:</b>			
One writer to paymaster, per act February 14, 1879 (pamphlet edition Stat. at L., p. 288) .....	1,017 25		
One writer to inspector, per act February 14, 1879 (pamphlet edition Stat. at L., p. 288) .....	1,017 25		
		12,411 50	11,894 25

## No. 8.—BUREAU OF STEAM-ENGINEERING.

NAVY DEPARTMENT,  
BUREAU OF STEAM-ENGINEERING,  
Washington, November 10, 1879.

SIR: In obedience to your order, I have the honor to submit to the department the annual report of this bureau.

By act of Congress approved May 4, 1878, there was appropriated for Bureau of Steam-Engineering for the fiscal year ending June 30, 1879, \$800,000, which amount has been expended as follows, viz:

Labor in navy-yards and stations in constructing new engines, boilers, and their dependencies, repairing old boilers, machinery, &c., and fitting vessels for sea-service, purchase and preservation of tools, handling and preservation of materials and stores.....	\$539, 730 0
Purchase of materials, stores, &c., freights, and incidental expenses (of which \$30,728.28 was for coal for shops at the navy-yards under cognizance of Bureau of Steam-Engineering for use during the fiscal year)...	220, 362 2
Payments made on foreign stations for repairs, materials, &c.....	21, 100 1
Total.....	781, 192 3
Less repayments by transfers in adjustments of appropriations.....	2, 017 9
Total actual expenditures.....	779, 174 4
Balance on hand.....	20, 825 5
Total amount appropriated for 1878-79.....	800, 000 0

The balance of \$20,825.56, however, is covered by obligations of the bureau for purchases, &c., at home and abroad, the vouchers for which have not yet been received.

The following amounts have been paid from the "deficiency appropriation" act, dated June 14, 1878, in addition to amounts exhibited in my last annual report, viz:

To Fabri & Channecey and others, for whom J. D. Hurlburt & Son were ship-brokers.....	\$3, 050 5
To Pratt and Whitney Company.....	21, 465 1
To Harlan and Hollingsworth Company.....	10, 000 0
To John Roach.....	70, 282 0
Total.....	104, 797 8

There yet remain to be paid from the above appropriation, for work not yet completed, or accounts not yet settled, the following sums, viz:

To Harlan and Hollingsworth Company.....	\$12, 881 0
To William Cramp & Sons.....	22, 850 0
To John Roach.....	14, 007 0

Total to be paid..... 49, 738 7

The following amounts were appropriated in excess of what was found upon final settlement of accounts to be due the parties named, and can be turned into the Treasury or reappropriated, viz:

Benner & Pinckney.....	\$0 4
Eastern Railroad Company.....	11 9
Old Dominion Steamship Company.....	2 3
Philadelphia and New York Steam-Navigation Company.....	2 1
Pratt and Whitney Company.....	1, 274 7
Quintard Iron Works.....	301 6
American Tube Works.....	4, 820 5
Providence Steam-Engine Company.....	20, 325 3
Total.....	26, 739 1



## BOILER CONTRACTS.

Since my last report, the boilers which were being constructed for the *n-clads Amphitrite, Puritan, and Terror*, contracted for under the administration, have been completed, inspected, and received, and they have been carefully stored at the works of the several contractors where they were built.

## GENERAL OPERATIONS OF THE BUREAU.

The following will exhibit the extent and character of the work done under the cognizance of this bureau, since my last report, upon machinery and boilers of naval steamers, together with their present condition, and what is required to fully complete and fit them for sea.

*Alert* (3d rate).—General overhauling and repairs to engines, boilers, &c., have been completed at the navy-yard, Mare Island, Cal., and a new four-bladed screw propeller, of bureau design, has been fitted. Ship in commission.

*Kearsarge* (3d rate).—Extensive repairs have been made to the machinery at the navy-yard, Portsmouth, N. H. New boilers have been put on board, and a new four-bladed screw propeller, of bureau design, has been fitted. Ship in commission.

*Marion* (3d rate).—General overhauling and repairs have been made at the navy-yard, Portsmouth, N. H. Ship in commission.

*Shenandoah* (2d rate).—Thorough and extensive repairs have been made to the machinery, new boilers have been supplied, and a new four-bladed screw propeller, of bureau design, has been fitted at the navy-yard, New York. Ship in commission as flag-ship.

*Uncatara* (3d rate).—General overhauling and repairs to boilers, engines, &c., are nearly completed at the navy-yard, Boston, Mass.

*Tennessee* (2d rate).—Engines, boilers, and dependencies have been thoroughly overhauled and repaired, and a new four-bladed screw propeller, of bureau design, has been fitted at the navy-yard, New York.

*Wachusett* (3d rate).—Extensive overhauling and repairs were made to the engines at the navy-yard, Boston, Mass. New boilers were placed on board, and a new four-bladed screw propeller, of bureau design, was fitted. Ship in commission.

*Michigan* (3d rate).—Boilers have been thoroughly overhauled and repaired at Erie, Pa. Ship in commission.

*Rose* (tug).—Slight repairs have been made to boilers at the navy-yard, Pensacola, Fla.

*Jeannette*.—In addition to the foregoing work, the bureau made extensive repairs to the engines, &c., of this vessel, at the navy-yard, Mare Island, Cal., and supplied her with two new boilers intended for the Albatross. These boilers, as originally designed, were fitted with one furnace each, but, from the experience gained by practice, it was deemed advisable to change them to double-furnace boilers, which was done. Reports of her performance since sailing for the polar regions give very satisfactory accounts of her efficiency and reliability in motive power.

The bureau desires, in this connection, to bring to the notice of the department the zeal, dispatch, and economy displayed and carried out by Chief Engineer Montgomery Fletcher, U. S. N., under whose superintendence the work was carried on, and it is largely due to his untiring activity and attention that the extensive repairs and alterations made to the *Jeannette* in the department of steam-engineering were brought to such a speedy and successful conclusion.

## NEW ENGINES, ETC.

*Nipsic* (3d rate).—New engines of the compound type have been erected in the vessel, connected, and tested under steam. New boilers designed by the bureau, have been built at the navy-yard, Washington, D. C., placed on board, and the following extracts from report of a board of engineer officers shows them to be of a successful type:

\* \* \* The water at no time showed a disposition to foam, which must be accepted as quite satisfactory evidence that under the conditions of the trial the circulation of the water in the boilers was all that could be desired and the steam-room ample.

The water in the river during greater part of the trial was very muddy and the tide low, so much so as to bring the bottom of the ship (two-thirds of the time) in contact with the accumulated mud near the wharf, and this, from necessity, had to be used more or less mixed with the feed-water.

The water-valves for relieving cylinders of water usually carried over by foaming or other causes, did not have to be used during the trial, which is another evidence that the boilers did not prime or lift the water.

The boilers were perfectly tight before, during, and after the trial, and their position, with arrangement in the ship, affords excellent opportunities for repairs; in fact every part of the boilers, fronts, backs, and sides, are accessible, and the whole is a complete success. \* \* \*

Experience having shown the unreliability of the single-furnace boiler as constructed and proportioned heretofore in the naval service, a different type of boiler, designed by the bureau, having two furnaces in each, was built at the navy-yard, Washington, D. C., and placed on board the *Nipsic*.

Particular attention has been paid in these boilers to accessibility interior for examination, cleaning, and repair.

*Galena* (3d rate).—New engines of the compound type and new boilers designed by the bureau, have been completed and are now being erected in the vessel at the navy-yard, Norfolk, Va. The ship will be ready for sea, in the engineer department, by the latter part of December. The new boilers of this vessel were originally designed with a single furnace, but experience having shown that their proportions and arrangements were faulty, a change was made in the type by substituting two furnaces and otherwise modifying them so that they are similar to those adopted for the *Nipsic*.

*Mohican* (3d rate).—New engines of the compound type and new boilers of the type adopted for the *Nipsic*, designed by the bureau, are being forwarded to completion and will be ready for service by the time the ship is prepared to receive them.

*Monadnock* (3d rate).—New boilers, designed by the bureau, have been completed, shipped to California, and stored in the navy-yard, Mare Island.

## THE DOUBLE-TURRETED MONITORS.

In connection with these iron-clads I would respectfully renew the recommendations made under date of February 13, 1879, as follows:

\* \* \* It will require from eighteen months to two years to build, and erect on board, complete and ready for steaming, the motive power of these vessels, while but a few months will be called for, in case of emergency, to put on board the turrets now on hand, and to supply the armature. If the machinery was completed, the vessels could be steamed to the navy-yard nearest the point of their construction, and put under our care and control, ready, in the engineer department, for immediate service.

I would, therefore, in view of what I have stated in the foregoing, recommend that



appropriation be made for the completion, and erection on board, of the machinery these vessels, as follows, viz:

Puritan steam-machinery .....	\$420,000 00
Amphitrite steam-machinery .....	230,000 00
Terror steam-machinery .....	230,000 00
Monadnock steam-machinery .....	285,000 00
Total .....	1,165,000 00

*Miantonomoh* (3d rate). New machinery, boilers, &c. have been completed, erected on board, connected, and a preliminary trial under steam has been made, with very satisfactory results, as is shown by the following extract from the report of the board of engineer officers appointed to conduct the trial, under date of May 15, 1879:

\* \* \* The main engines and boilers have been sufficiently tested to enable us to be of the opinion that the different parts are properly proportioned and that the machinery is well designed for the end proposed, and with ample strength in the various parts.

As soon as practicable it is the intention to subject the motive power of this iron-clad to the usual dock trial of seventy-two consecutive hours under full steam pressure, with the vessel secured to the wharf. The following exhaustive description of the motive power, and data connected therewith, of this vessel is submitted in connection with the foregoing.

#### SPECIAL WORK.

The following work has been done during the past year, in addition to the routine labor of fitting and repairing machinery, boilers, &c., on board naval vessels:

Boilers designed by the bureau of the description required for use in connection with the compound type of engines have been completed for the *Nipsic*. Steam-launch motive power, namely, thirteen boilers and the engines, have been made at the navy-yard, Washington, and those now in service with the various naval vessels in commission are stored at several navy-yards, for use as they may be required.

Three large screw-propellers of composition, aggregating a finished weight of 14 tons, have been cast at the navy-yard, Washington, from bureau designs, utilizing in their manufacture, as far as practicable, old material, scrap, and condemned propellers of obsolete types.

#### NAVY-YARDS.

The departments under cognizance of this bureau at the several yards, under their present organization and equipment, are in good working condition.

Your attention is respectfully called to my reports of November and December, 1877, in relation to certain additional buildings and equipments required at the navy-yards at Norfolk and Pensacola.

Now that the sectional dock for the Pensacola navy-yard has been fully transported to that place, and in view of the isolated condition (regards facilities for repairs) of our vessels operating or stationed on that part of our coast, I would respectfully renew the recommendation contained in my last annual report, namely: "\* \* \* it becomes a matter of the first importance to have the Pensacola navy-yard placed in the highest state of efficiency."

The tools required to equip the proposed additions to the shops could be supplied to some extent from the other yards, without materially affecting their present efficiency and requirements.

In this connection I would respectfully recommend an appropriation of \$25,000 for the purchase of tools and machinery in the following named yards, to be divided as shown:

Pensacola navy-yard .....	\$10, 00
Norfolk navy-yard .....	10, 00
Mare Island navy-yard .....	5, 00
Total .....	25, 00

#### WORK REQUIRED.

The following will exhibit the character and extent of the work necessary to be carried out on the vessels enumerated, during the fiscal year 1880-'81, under the cognizance of this bureau:

*Adams*.—General repairs.

*Alliance*.—General repairs.

*Ashuelot*.—General repairs; work in progress on China station.

*Brooklyn*.—General repairs. New boilers placed and connected. New four-bladed screw propeller of bureau design.

*Canandaigua*.—Repairs to be completed.

*Despatch*.—To be supplied with new boilers, and engines to be thoroughly overhauled.

*Hartford*.—Extensive repairs. New boilers placed and connected. New four-bladed screw propeller of bureau design.

*Iroquois*.—Extensive repairs to engines. New boilers of bureau design to be constructed.

*Juniata*.—Thorough repairs. New boilers already completed to be placed in the ship. New four-bladed screw propeller of bureau design and new crank-shaft.

*Lancaster*.—Work has been commenced, taking out old engines and boilers, and erecting on board, new 60 by 36 inch engines, with new boilers which are on hand.

*Michigan*.—General repairs. Should have new boilers.

*Monocacy*.—General repairs.

*Monongahela*.—Thorough repairs to engines. New boilers to be constructed from bureau design. Ship out of commission.

*Ossipee*.—Extensive repairs to engines. New boilers to be constructed of bureau design.

*Plymouth*.—General overhauling and repairs.

*Tallapoosa*.—Needs new boilers.

*Tuscarora*.—Extensive repairs to engines. New boilers to be constructed of bureau design.

*Yantic*.—New boilers already completed and placed in the ship. New four-bladed screw propeller of bureau design has been fitted, and the engines are being thoroughly overhauled.

#### EXPERIMENTAL INVESTIGATIONS.

The board of experienced engineer officers, in session at the navy-yard New York, and of which Chief Engineer B. F. Isherwood, U. S. N., is president, continue experimentation upon such subjects as are submitted by the department, and the reports made from time to time are in the highest degree interesting and valuable alike to the naval service and to the general public.

With a view of increased efficiency and economy in boiler construction and for the purpose of demonstrating by exhaustive experiments the best forms and proportions in staying and bracing of boilers, a board



was convened at the navy-yard, Washington, for this purpose. The board consisted of Chief Engineer James P. Sprague, U. S. N., and Passed Assistant Engineer George E. Tower, U. S. N., and performed the duty assigned in the most thorough manner, reflecting great credit upon themselves and upon the service.

The results of these researches in the strength and distribution of material in boiler construction are embodied in Appendices A and B.

#### PERSONNEL OF THE ENGINEER CORPS.

The number of vacancies in the grade of assistant engineer is still quite large, but under the operation of existing law, and by reason of the high standard of qualification for entry at the Naval Academy, a large percentage of annual graduates is insured, and the existing vacancies will be filled from this source alone.

The present system of competitive examination for entry at the Naval Academy brings into the Engineer Corps the best talent, and as their numbers augment, their influence, tending to increase the efficiency of the Navy, will be more manifest with every succeeding class.

In this connection I will repeat what has been already said as to the advisability of abolishing the rate of machinist in the Navy; it is a worse than useless expenditure of public money to maintain a rate at a large compensation (if we take into account the character of talent usual with that class) for the performance of duties properly devolving upon commissioned officer, and which should be carried on by him, and not by an irresponsible, and oftentimes ignorant, enlisted man.

"\* \* \* As a measure of economy to the government, the machinist system should be abolished at once, inasmuch as through their ignorance and carelessness the Bureau of Steam Engineering has been involved in expenditures for repairs amounting to many thousands of dollars." \* \* \*

"\* \* \* In another direction the interests of economy can be subserved by the abolition of machinists, viz: They number not far from 100, which, at a pay of \$900, represents an annual expenditure of \$90,000; and as they are included in the complement of men allowed by law for the Navy, they cripple its efficiency, in personnel, by a force not sufficient to man a vessel of the Yantic class; besides which, the duties assigned them can be performed, as they should be, by the Passed assistant, assistant, and cadet engineers of the Navy."

"\* \* \* As an economical and efficient substitute for the present expensive and unnecessary machinist system, I respectfully suggest the following: Let there be enlisted for every ship, when commissioned, whether large or small, and as a part of her complement of the engineer force, one blacksmith, one boiler-maker, and two finishers. All to be given the rate of 'engine-room artisan,' with a uniform pay of \$50 per month, and the usual rations. The change here suggested will insure saving in money to the government of \$45,000 per annum, and an increase in the personnel of the Navy of about 150 men, as above stated." \* \* \*

#### APPRENTICE BOYS, ENGINEER DEPARTMENT.

Under the provisions of section 1518 of the Revised Statutes, boys between the ages of fifteen and eighteen years may be enlisted to serve the Navy until they arrive at the age of twenty-one years.

Boys displaying some aptitude for mechanical pursuits and otherwise

qualified are selected upon their own application for instruction in the engineer force, where they receive instruction in the coaling and working of fires, the construction and operation of boilers, the salinometer, steam, and water gauges, &c.

From accounts received from the various ships upon which these boys are serving in the engineer force they seem to give general satisfaction and I am of the opinion that it is to this system that we must look for the men who are to make efficient and intelligent substitutes for the present type of enlistments. The number detailed for the engineer department is not, as yet, fixed by law or regulation, and at the present time there are but twenty under instruction on the training-ship Minnesota, and about an equal number afloat in the various squadrons.

I would recommend that the system here inaugurated for firemen apprentices, be permanently organized by such legislation as may be necessary. By this means the rate of engine-room artisan recommended can be filled in a measure by men thoroughly competent to perform all of the duties pertaining to the rate; and this affords an additional argument for the abolition of the machinist system as being unnecessary, expensive, and superfluous.

#### PENSIONS FOR DISABLED MECHANICS.

In justice to a class of men deserving of the consideration of the government, I would respectfully recommend that such provision be made as in the wisdom of Congress may seem advisable to meet the necessities of this class of public servants; and beg to refer in this connection to my last annual report.

#### ESTIMATES.

I have the honor to submit herewith the annual estimates of this Bureau for the fiscal year ending June 30, 1881.

Very respectfully,

W. H. SHOCK,  
*Chief of Bureau.*

Hon. R. W. THOMPSON,  
*Secretary of the Navy.*

#### No. 9.—BUREAU OF MEDICINE AND SURGERY.

NAVY DEPARTMENT,  
BUREAU OF MEDICINE AND SURGERY,  
October 31, 1879

SIR: In response to your order of the 3d instant, I have the honor to submit the usual annual report of the Bureau of Medicine and Surgery which comprises a statistical exhibit of the diseases and casualties occurring in the Navy during the year 1878, and estimates for the support of the medical department for the fiscal year ending June 30, 1881.

It will be seen that the health of the officers and men displays material alteration since the last report, but it is hoped that the active efforts of the department, now being exerted, supplemented by the sincere co-operation of officers of all grades in improving the sanitation of ships of war, will, in the near future, result in such success as to greatly diminish the sick-rate.

It was an opprobrium of sanitary science for years that no efficient



practical plans had been devised to prevent, or even to ameliorate the terrific suffering of early mariners, and even when science finally furnished correct data for this purpose, the supineness of officials or adherence to ancient customs furnished a barrier to their realization. It befell that, under these circumstances, national enterprises, both commercial and military, often failed of accomplishment, or were imperfectly consummated by reason of loss of life and health of officers and crews of ships and fleets from remediable causes. History narrates comparative facts in the memorable contests of the continental powers for maritime supremacy and foreign conquest, during the seventeenth and eighteenth centuries; and later, the experiences of our own Navy and commercial marine contribute their quota of death and suffering to swell the army of martyrs to ignorance of sanitary laws and bad naval construction. The grievances of the early navigators were bad water, starchy food, and pernicious air, arising either from over-crowding, defective ventilation, or imperfect construction, whereby chips and other debris of the building materials were sealed up in the spaces between the timbers to undergo putrefactive changes, without any possibility of the accumulated mass being washed out through properly constructed drains. The deposits mingled with the leakages of molasses, vinegar, and various other materials of organic origin, formed an admirable breeding-bed, so to speak, evolving abundant morbid exhalations and fostering mortiferous contagia. The influence of all these various causes of disease and death among seamen was, for a long time, not fully appreciated.

It was imagined that good food and water were the chief essentials of health on long voyages: that as long as the stomach was catered to sufficiently it mattered little about the quality of the material with which the lungs were fed. This erroneous notion of the importance of abundant wholesome air has cost nations thousands of lives and millions of money. Sanitary science has not labored in vain in later times in teaching the paramount fact that pure air is triune with pure food and pure water in sustaining healthy and vigorous life. The broader mental culture and deeper interests in such studies, now prevalent among officers, have combined greatly to disseminate more correct views in these particulars. Indeed, thought is pressed to run in these channels now that human life has come to be regarded as more valuable to the nation, which very naturally expects those to whom it entrusts the control of large bodies of its citizens, to familiarize themselves with the health laws on which their usefulness and efficiency depend. The progress of science has brought amelioration of the hardships of human life throughout the world over; the mariner no longer floats on the ocean the toy of the elements; steam enables him to control the situation perfectly; by its means he flies over his course when favorable winds and tides fail to render their assistance, and at the same time it furnishes a perennial spring of pure fresh water. The coarse monotonous food, saturated with salt and hardened by months of stowage, has given way to wholesome meats, fruits, and vegetables, which have not only banished scurvy and other diseases from the list of nautical horrors, but also placed within the reach of the sea-farer means of even luxurious living. These are recent achievements in these directions, and now inquiry is busy to devise better means for ventilation, to vouchsafe more air and light to the denizens of nautical habitations.

The time has not yet arrived that we may control the hygienic conditions surrounding the aquatic as we do those of the terrestrial abodes of man. This difficulty arises from the differences in the nature of the



constructions and their physical surroundings, between which there is such a necessary relation that, to prevent danger to life, the nautical construction must be made to conform to them without paramount regard either to the health or comfort of the human beings upon it, which must ever be less easily maintained at sea. The shore habitation is in a measure independent of the physical surroundings that militate against healthful existence. Spacious and stable rooms with breathing walls and ample inlets and outlets for fresh air that can be kept open in all weathers, without danger of being swamped with salt water or deluged by rain, constitute the chief advantages of terrestrial habitations.

There are various ways by which it is endeavored to secure a movement of the air on shipboard; through the hatches and air-ports, aided by windsails and ventilating tubes running through the decks; by taking advantage of the inequality between the warmer and lighter air below decks and the cooler and heavier air externally. The distribution of air is very imperfect under these simple conditions, and frequent efforts have been made to supplement the natural draughts by mechanical contrivances, the primitive form of which consists of a fan inclosed in a suitable box, turned by a crank, a canvas tube connecting the machine with the apartments below decks which are to be ventilated. This apparatus is inefficient both as possessing little power and the impossibility of its being kept going for prolonged periods. Again, the foul air may be withdrawn from below by aspiration, the fresh air rushing in by the various available apertures and crevices always present. This plan is made applicable by causing draughts by various mechanical contrivances; tubes running through the decks and terminating externally in hoods of different patterns and with or without fans, the revolution of which causes an upward current; or, the foul air may be removed by pumps connected with a system of tubes terminating in the apartments below. A current may also be originated in the tubes by rarifying the air by means of heat or steam.

Ventilating tubes with hoods and fans furnish a simple device which will work satisfactorily on a small scale, but they are not of practical adaptation to ships of war. This plan had a limited trial on the United States steamer Tallapoosa a short time ago, and the conclusion was arrived at that its use would entail more expense than its utility and advantage would justify. On the same vessel another plan was also put to practical test; this consisted of a large tube attached to the rudder, extending below the water line and connected with the interior of the ship by tubes of small diameter, the water acting in the rudder tube with every pitch of the ship, like the piston of a pump. This apparatus would be useless in port, or in calm weather, at the very time when fresh air is needed; besides its cost is considerable. It has been suggested that the same sort of contrivance should be placed on the sides of the ship and to utilize the rolling motion of the vessel, but the same objections apply equally as in the former case.

Upwards of a century and a quarter ago the celebrated Dr. Mead published an account of a method of ventilating ships, devised by James Sutton, of Edinburgh, which consisted in a system of tubes terminating in a large main running to the ash-pit of the galley where the rarifying effects of heat could be utilized.

These are the chief methods that have been suggested and tested, in one form or another, and all have been found not to fulfill all the desirable conditions of nautical ventilation. Impressed with this fact, the de-

ment, on the 20th March, 1878, ordered a board composed of intelligent officers of the different branches of the service "to examine into and ascertain the best system of *ventilation*, mechanical or otherwise, by which ships of the Navy may be more perfectly ventilated"; the subject was quite thoroughly considered, and the result of their deliberation was the adoption of the system now in use on board the United States steamer *Richmond*, flag-ship of the Asiatic squadron. The method which is illustrated by the annexed diagram is based on the aspirator plan, by means of a net-work of tubes reaching every part of the ship, and terminating in a large main through which the currents are drawn by a steam power, thus changing the entirety of air within the ship; or the current may be reversed and the air driven into the interior. This latter movement may be utilized in disinfecting, by means of chemical substances in a vaporous state, or by superheated steam. The success of this system is pretty well assured by the favorable reports contained in private letters. The official reports, which embrace atmospheric examinations covering two quarters, are too few to authorize comparison with similar observations made on other ships not provided with the ventilator. The graphic trace herewith appended exhibits a summary of the observations made up to the present time.

It may be mentioned, however, in this connection that the demonstration of the advantages of any system of ventilation by physical observations is surrounded by peculiar difficulties. The dangerous element of vitiation by overcrowding is the organic exhalations of the lungs and skin, and there exists at present no ready, easy, and reliable means of estimating its quantity. It has been assumed that, as this organic material and carbon dioxide are at the same time products of the same vital changes, the amount of the latter in the air may be regarded as a gauge of the former. This assumption would, perhaps, be unobjectionable, were it not the case that grave errors may creep into the calculations on reason of the possible accidental presence of this agent in the air from other than vital sources; or the methods may be lacking in uniformity and exactness. This important question has been referred to competent officers for thorough examination. I am strongly impressed, however, with the belief that the United States steamer *Richmond* is a complete success as far as ventilation goes, and this belief is strengthened by the present testimony of the officers, who live below decks, and have judged the purity of the air from the character of their sensations while the hatches were closed in tempestuous weather.

This system of ventilation is not expensive when its efficiency is considered; of course, it requires a great deal of alteration in a finished ship to locate a sufficient number of pipes in proper position; for instance, its introduction on board the United States steamer *Richmond* involved an expense of \$16,000. It is, however, an admitted fact, that the enormous expenditures looking towards the improvement of the health of the national forces, or the prevention of disease in communities is true economy, though the first outlay might seem large. This fact has already been demonstrated in the Navy by diminished sick-lists, fewer expensive medical surveys, and lessened pension-roll, as the sanitary surroundings of the sailor have been improved, and his food, water, and air brought up to a higher standard of quantity and quality.

It would, therefore, be a measure of the highest wisdom to introduce these important reforms into new ships, and into all the old ones when undergoing repairs.

While the indispensable necessity for pure air is so urgent on ship-



board, it is no less a matter of great concern to secure an abundant supply of sunlight. The plan hitherto pursued of piercing the sides of the ship with small round air-ports does not answer the important object. The department wisely decided in the case of the United States steamer Richmond to substitute large ports, fitted with hinged doors, which, at the same time improving the illumination, supplied, when opened, admirable fresh-air adits. The influence of a stream of sunlight upon the physical and mental welfare of the occupants of the hitherto small, dark and dark rooms of our naval ships will be manifested in the maintenance of a higher health standard among officers and men, and also the possession of more cheerful manners and evenness of temper—qualities so essential to the happiness and thorough efficiency of all ships' companies. The adoption of the Wilson port in all of our vessels when being repaired is, therefore, recommended as an important sanitary measure.

As remarked above, it is impossible to secure the same comfort, and as full control over the conditions of sanitation on sea as on land, for those who are in health. How much more difficult it is to provide for the sick. It has been the custom to assign a certain portion of the ship to the use of the sick and wounded, and usually the place selected is located in the forward part, and though they are perhaps here most out of the way, yet a worse place could not be selected, for it is the place of all others which combines most of the disadvantages of ship-life—dampness, motion, least air and light, and most noise. For these reasons it would be far preferable to locate the sick-quarters somewhere in the waist of the ship, although, perhaps, the selection of the place must be determined for each ship as now finished, yet it is certain that, by the exercise of sound judgment and intelligent foresight, much amelioration in this particular can be effected while the ship is under construction; for cut off, as the mariner is, from home and friends, in foreign lands, it requires a stouter *morale* to resist the depressing influences of disease, and when sick to bear up under it, than when surrounded by the cheering influences of home. It is, therefore, desirable to furnish them, as far as circumstances will permit, with every comfort and convenience procurable on shipboard.

The frequent infection of our ships in tropical ports where epidemic diseases and notably yellow fever prevail demands the earnest consideration of the department. It has happened, in spite of the closest attention to hygienic regulations, that yellow fever has gained a footing among the crews of vessels and raged with such violence, that nothing short of immediate departure for a northern climate sufficed to stamp it out. The vessels have to be laid up for a winter or so in expectation that severe cold will destroy the germs of the disease, but unfortunately there exist grave doubts of this ever being the fact; at least, it has not proved successful in certain recent instances, for the return of the vessels to the tropics, as in the cases of the Plymouth and Susquehanna, was attended with a new outbreak. These and other examples show that disease germs in general, and yellow-fever germs in particular, may have their development checked or their activity abated, but are not destroyed by even low temperatures. As far as experimental research on a small scale proves anything, heat is shown to be a far more potent agent of destruction to germ life than cold. The practical difficulties of applying heat on a large scale are doubtless great, but the fact really is that experimentation in this way involves large expense, beyond the means of most private individuals, and, therefore, but little has, up to the present time, been done. The terrific affliction of this country by epidemic

diseases has raised the subjects of the investigation of their origin and spread, and the discovery of the best means of counteracting and controlling them, to the importance of national questions, to be worked out under government auspices. Successful and reliable means of disinfecting ships speedily would be an immense gain both to the Navy and to the commercial marine, and would protect communities from the importation of epidemics, which destroy in a few months valuable lives, and cause the loss of vast wealth. For the above-stated purpose, the establishment of a station on our Northern coast would be desirable, where vessels attacked by infectious diseases might resort, the officers and crew transferred to suitable buildings on shore, the sick properly cared for, while the rest of the men could dismantle the vessel and thoroughly cleanse and disinfect her. In this manner, in a few days, the vessel would be ready for service, without any fear being entertained of a recurrence of the disease. While the station would thus be serving the necessities of immediate use, experimentation on the subject of disinfection might be carried on by trained medical officers of the Navy, who are so well calculated by their experience and abilities for this work. I am convinced that the valuable information and experience thus obtained would soon repay the nation for the outlay incurred in establishing the station, and I would therefore solicit your active exertions in securing an appropriation for this purpose. I estimate the cost of the ground, the erection of suitable buildings, and the purchase of machinery and disinfectants to be \$65,000.

#### HOSPITALS.

The hospital at Norfolk, Va., is now being put in good repair. The hurricane which prevailed in that vicinity last August damaged the buildings and grounds to such an extent as to require the expenditure of \$3,999. This institution is now being furnished with a steam-heating apparatus, which, when complete, will supply a long-needed improvement, and at the same time elevate it to the rank of one of the best equipped hospitals in the country.

The hospital at Annapolis has been abandoned, as the building used for quartering the sick inside the walls of the Academy affords abundant space for all its wants, and it would only be on occasions of epidemic disease that any greater hospital accommodation would be necessary, and this necessity could be easily met in such cases by the erection of temporary structures. A considerable expense is incurred every year in caring for the building and grounds, and the former is gradually falling into decay with disuse, so that, in my opinion, the interests of the government would be best served by disposing of it and turning the proceeds over to the hospital fund, the resources of which are now strained to provide for hospitals actually needed.

The hospital at Mare Island, California, has been by judicious expenditure kept up to that standard of efficiency which the growing necessities of that station absolutely demand. The available space for accommodating any material increase of the number of patients is, however, greatly restricted by the medical officers being quartered in the building; a state of affairs which should not exist. I would, therefore, earnestly call your attention to the pressing necessity that exists of putting up quarters for the medical staff in the hospital grounds. Suitable buildings could be erected for this purpose at a cost of \$15,000.



## INSANE OF THE NAVY.

On the 30th September, 1878, there remained under treatment in Government Hospital for the Insane—

Two commanders, 2 lieutenant-commanders, 2 first assistant engineers, 1 late ensign, 10 seamen, 2 ordinary seamen, 2 ordinary seamen extra, 1 seaman extra fireman, 1 late seaman, 7 landsmen, 9 marines, 3 beneficiaries, 1 second-class boy.  
Total .....

Admitted during the year ending September 30, 1879: 1 past assistant surgeon, 1 gunner's mate, 4 seamen, 1 seaman extra fireman, 3 landsmen, 1 marine .....

Total number under treatment .....

Discharged during the year ending September 30, 1879: 1 gunner's mate, 3 seamen, 1 ordinary seaman, 1 ordinary seaman extra, 1 seaman extra fireman, 2 landsmen, 3 marines, 1 beneficiary. Total .....

Remaining at the end of the year: 2 commanders, 2 lieutenant-commanders, 1 passed assistant surgeon, 2 first assistant engineers, 1 late ensign, 11 seamen, 1 ordinary seaman, 1 ordinary seaman extra, 1 seaman extra fireman, 8 landsmen, 7 marines, 2 beneficiaries, 1 late seaman, 1 second-class boy. Total .....

## NAVAL HOSPITAL FUND.

The condition of this fund is as follows:

Balance on hand October 1, 1878 .....	\$47.
Transferred to the credit of the fund in settlement of accounts by the Fourth Auditor from October 1, 1878, to October 1, 1879 .....	74.
Credit by appropriation for the fiscal year ending June 30, 1880 .....	50.
Total .....	172.
Deduct amount of expenditures from October 1, 1878, to October 1, 1879 ..	106.
Balance on hand October 1, 1879 .....	66.

Very respectfully, your obedient servant,

PHILIP S. WALES,  
*Surgeon-General, U. S.*

Hon. R. W. THOMPSON,  
*Secretary of the Navy.*

## No. 10.—BUREAU OF CONSTRUCTION AND REPAIR

NAVY DEPARTMENT,  
BUREAU OF CONSTRUCTION AND REPAIR,  
October 24, 1878.

SIR: In conformity with your instructions, I have the honor to submit herewith statements showing the work of the bureau for the year, and estimates of expenditures for the year ending June 30,

1878.

July 1. Amount appropriated by Congress for the fiscal year 1878-79. \$1,500,000	
Expended from July 1, 1878, to June 30, 1879, for materials, &c. ....	\$150,312 49
Labor at navy-yards .....	1,329,970 00
	1,480.

Balance on hand July 1, 1879, under Construction and Repair .....

19,



1878.		For timber.	For sundries.
June 14.	Amount appropriated by Congress to meet a deficiency on account of the fiscal year 1876-77.	\$416,319 32	\$931,134 55
	Expended:		
	From June 15, '78, to June 30, '78. \$261,801 09		
	From July 1, '78, to June 30, '79... 101,394 96		
		363,196 05	
	From June 15, '78, to June 30, '78. \$673,885 86		
	From July 1, '78, to June 30, '79... 50,424 92		
			724,310 78
	Balance on hand July 1, 1879.....	53,123 27	206,823 77

*Vessels on which work in repairing or completion was done during the fiscal year 1878-79.*

Colorado.	Tuscarora.	Montauk.
Franklin.	Vandalia.	Nahant.
Minnesota.	Wachusett.	Passaic.
Wabash.	Wyoming.	Saugus.
Alaska.	Yantic.	Wyandotte.
Antietam.	Tallapoosa.	Alarm.
Canandaigua.	New Hampshire.	Catalpa.
Lancaster.	Constellation.	Cohasset.
Lackawanna.	Constitution.	Emerald.
Plymouth.	Independence.	Fortune.
Powhatan.	Dale.	Jean Sands.
Pensacola.	Jamestown.	Leyden.
Richmond.	Portsmouth.	Mahopac.
Shenandoah.	Saratoga.	Mayflower.
Tennessee.	Saint Louis.	Monterey.
Ticonderoga.	Guard.	Pilgrim.
Alert.	Ajax.	Pinta.
Enterprise.	Canonicus.	Rescue.
Galena.	Camanche.	Rose.
Iroquois.	Catskill.	Snowdrop.
Juniata.	Jason.	Speedwell.
Kearsarge.	Lehigh.	Standish.
Marion.	Manhattan.	Triana.
Nipsic.	Miantonomoh.	Amphitrite.
Quinnebaug.	Monadnock.	Terror.
Swatara.		

The bureau has been employed in the past, as in the preceding year, in repairing such of our ships as were most needed and the appropriation would admit of. We are still pursuing this course, and before the close of the next fiscal year the vessels comprising our squadrons will be in as an efficient condition as they are capable of being made. Some of the ships built or rebuilt within the last six years, such as the Trenton, Quinnebaug and class, Adams and class, have proved to be fast sailers and good sea boats, and are spoken of by their commanding officers, after full trial, in the highest terms.

Lacking authority, as well as money, to build new vessels, none have been commenced since those authorized by act of Congress approved March 3, 1873. We have, therefore, not kept pace with other maritime powers in the construction of vessels of war, and, with the exception of the vessels above alluded to, our Navy is composed, to a large extent, of ships of a by-gone age; and it is hoped the day is not far distant when the necessity of having a modern navy will be recognized, and that appropriations will be made to enable us at least to commence the building of ships of modern type. Some of the plans of vessels called for by the bureau on the 16th day of February, 1878, have been forwarded; others are still in the hands of the constructors; and as there is no appropriation to commence building, the plans have not been called in, as

it is the desire of the bureau to afford opportunity to all constructors to avail themselves of new devices which may occur to them from time to time or be suggested by the experience of other nations.

It is desirable to finish without delay the double-turreted monitors Terror, Puritan, Amphitrite, and Monadnock, and to build new turret and pilot-house for the Miantonomoh. Work on the latter vessel is not being pushed forward rapidly, and it is expected she will be ready to receive her turrets and pilot-house in a few months. In addition to this work, we should finish the ships New York and Mohican; the former is in frame in the Brooklyn navy-yard, and the latter in the same condition at Mare Island. To finish the monitors and cruising-ships as above indicated, during the next fiscal year, will require an appropriation of \$3,121,876.

To purchase the requisite material, and keep in repair vessels worn and repairing, some of which are now in commission, will require an appropriation of \$1,500,000, and that amount has been estimated for in the accompanying tables.

While it is probable that many of our ships to be built hereafter will be of iron or steel, many others will be built of wood. The greatest drawback to the building of wooden ships is now, as it has ever been in the past, the rapid decay of the material used in their construction. Various methods have been tried to preserve wood material from decay, but the devices used have been successful so far to a very limited extent, and, although all promised well in the beginning, experience has not borne out the expectations of the inventors. The end sought, however, is of such importance that it cannot be lost sight of, and it is believed that the method of the American Wood Preserving Company, known as the Thilmany process, now in use in the Boston navy-yard, will prove to be better than any preceding it; therefore it is that, to a limited extent, we are preparing by this process some of the material we now have on hand. Such as we are now preserving will be used almost exclusively in repairs, and we shall the sooner be able to arrive at a conclusion as to its merits. Lapse of time only can determine whether the process is superior to all others, and, therefore, until a sufficient time has elapsed to prove beyond a doubt that it will do all the inventor claims for it, it is not advisable to adopt the system permanently, or to purchase the apparatus.

The subject of the ventilation of our ships has received much attention within the last two years, and, with a view to making all the improvements possible, larger air-ports and additional side and pig ventilators have in some cases been introduced; the most successful plan for thorough ventilation yet tried is that introduced in the Rammond. As this plan, however, is expensive, and occupies much valuable room, a modification of it is sought for; and in the plans and estimates now being made for its introduction in the Lancaster and Brooklyn, it is believed that both cost and space can be reduced.

Acting under a law approved March 3, 1879, and in obedience to your order of March 17, 1879, Naval Constructor Fernald and Assistant Naval Constructor Hoover were appointed to examine the naval reservations in Florida, to ascertain whether they were of any value to the Navy. As the work was necessarily commenced late in the season, it has only been partially completed. All that part of the State lying west of Tallahassee has been examined and all found valueless for naval purposes, except sections 3, 4, 8, 9, and 10, in township 3 north, range 27 west, and sections 9 and 10, in township 3 south, and range 29 west, as per report forwarded under date of June 4, 1879.

There have been no additions to the corps of naval constructors for four years, and in order that the corps may be kept in an efficient condition, I respectfully recommend the appointment of four assistant naval constructors, to be selected after a competitive examination. Naval constructors heretofore have been selected generally from those who have had to depend entirely upon themselves for the attainments necessary to fit them for their profession. As members of some other branches of the service are from youth under the fostering care of the Government, it would seem that the education of men theoretically and practically for the exceedingly important business of designing, building, and fitting our ships should receive the attention which its importance demands. This want can probably best be met by the establishment of a school of naval architecture. And I respectfully ask attention to the plan which I had the honor to suggest in my report of October, 1877. Respectfully submitted,

J. W. EASBY,  
*Chief of Bureau.*

Hon. R. W. THOMPSON,  
*Secretary of the Navy.*

#### No. 11.—MARINE CORPS.

HEADQUARTERS MARINE CORPS,  
COMMANDANT'S OFFICE,  
*Washington, D. C., October 18, 1879.*

SIR: I have the honor to submit my annual report for the past year. On the 30th September, 1879, there were 1,979 enlisted men in the Marine Corps, of whom 975 are on board ships in commission, and 1,004 at the several shore-stations.

I renew my recommendation of two years past for an increase in the number of privates.

Having recently returned from a tour of inspection, I am happy to state that I found the officers and enlisted men at the different posts well instructed, and presenting a very creditable military appearance.

Repairs are being made at Portsmouth, N. H.; Boston, Mass.; Brooklyn, N. Y.; and Mare Island, Cal., barracks, which will make them more comfortable.

At League Island the Antietam has been altered into very commodious quarters for the enlisted men, and will answer all purposes for the present. Much credit is due to the naval constructor at that station (Mr. Philip Hichborn) for the excellent plans prepared by him, and the energy with which he has pushed the work on the ship to prepare her in time. No improvements have been made at Norfolk, Va., or at the navy-yard, Washington, D. C., for lack of appropriations.

At Annapolis, Md., the Wyandank, long used for guard and mess purposes, has sunk. The men have been transferred to a shed on the wharf, no other place being available.

No quarters have been built for officers anywhere, no appropriation having been made.

In the course of the present year the number of officers will probably be reduced to that allowed by law. I renew my recommendation of last year in reference to future appointments, and in view of the importance of the subject to the best interests of the Corps, trust that the Department will make the proper recommendation to Congress.



The system of instruction in rifle firing lately issued to the Army has also been adopted in the Marine Corps, and the rapid improvement ready made by officers and men is very satisfactory.

During the past year new arms of caliber 45, have been issued to the troops, and the old ones withdrawn as fast as possible.

The annual estimates, in duplicate, were forwarded to the Department on the 25th September last.

Very respectfully, your obedient servant,

Hon. R. W. THOMPSON,  
*Secretary of the Navy.*

C. G. McCRAWLEY,  
*Colonel Commandant.*

UNITED STATES MARINE CORPS,  
QUARTERMASTER'S OFFICE,  
Washington, D. C., August 14, 1879

SIR: Having, in obedience to orders, visited the stations at Norfolk, Va.; Portsmouth, N. H.; Boston, Mass.; Brooklyn, N. Y.; League Island, Pa.; and Annapolis, Md., beg leave to report as follows:

The barracks at Norfolk, Va., are in good condition, and will require only the usual annual attention to keep them so.

At Portsmouth the general appearance of the barracks is very good, but the flooring of the men's quarters, guard-room, and some of the window-frames and sashes need repairs, and the walks leading from the parade-ground to the barracks should be paved with hard brick. The coal-house should be enlarged, and the straw-shed needs considerable repairs if it is to continue a permanent building.

At Boston the barracks and quarters for officers would be improved by being painted inside and out. The steps leading from the navy-yard to front of commanding officer's quarters on Chelsea street should be replaced, the wooden stairs leading to the cellar in men's quarters repaired, and the brick pavements connected with the entire barracks should be relaid. The parade-ground, from the effects of heavy rain, is gradually washing away, and if it could be concreted it would be a decided improvement. The skylight in the court-yard needs repair and its frame-work strengthening.

The barracks at Brooklyn presents nearly the same appearance it did last year, but the entire building inside and out (with the exception, probably of the part used as a hospital) needs special attention, and nothing but a general overhauling and the expenditure of several thousand dollars can put it in proper condition.

At League Island, as you are aware, the men are still quartered aboard the Dictator, but that ship is not well suited for quartering many men.

In regard to quarters at the navy-yard, Washington, I repeat, as last year, that they are entirely too confined for the usual strength of the command at that post, and they should be repaired upon a plan that would much enlarge them.

At Annapolis I found the Wyandank, aboard which the men mess and the cooking was done, had the night before sunk so as to have several feet of water in her hold. That circumstance, I was informed, had been reported to the department, and recently authority has been given for material required for flooring and replacing rooms to be used for kitchen, mess, and guard-room in place of the Wyandank. The build-



ing on the wharf, used as quarters for the command, was in good condition, and will require only the usual attention to repairs.

I am, respectfully, your obedient servant,

W. B. SLACK,  
*Quartermaster Marine Corps.*

Col. CHAS. G. McCAWLEY,  
*Commandant United States Marine Corps, Washington, D. C.*

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UNITED STATES MARINE CORPS,  
QUARTERMASTER'S OFFICE,  
*Washington, D. C., September 17, 1879.*

SIR: I respectfully transmit herewith the annual estimates of appropriations required for the service of the fiscal year ending June 30, 1881, by the quartermaster's department of the Marine Corps.

These estimates vary from those of fiscal year ending June 30, 1881, as follows:

Provisions, decreased.....	\$7,227 00
Clothing, increased.....	1,835 50
Fuel, decreased.....	1,173 50
Military stores, increased.....	8,140 00
Repair of barracks, decreased.....	2,000 00

The aggregate amount of these estimates is \$425 less than that asked in estimates of last year.

Under "military stores," \$7,500 for the purchase of Springfield rifles, caliber 45; \$1,000 for purchase of ammunition, and \$500 for purchase and repair of instruments for band, and purchase of music, making a total of \$9,000, is estimated for.

The aggregate amount asked for fiscal year ending 30th June, 1880, is \$215,556.50, being \$10,362.50 more than the amount appropriated for the current fiscal year.

I am, very respectfully, your obedient servant,

W. B. SLACK,  
*Quartermaster Marine Corps.*

Col. CHAS. G. McCAWLEY,  
*Commandant United States Marine Corps, Headquarters.*

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HEADQUARTERS MARINE CORPS,  
*Paymaster's Office, September 25, 1879.*

SIR: I respectfully submit herewith estimates for the pay of officers, non-commissioned officers, musicians, privates, and others of the United States Marine Corps, for the fiscal year ending June 30, 1881.

The estimate for transportation of officers has been increased \$3,000, the sum heretofore appropriated for this purpose having been found entirely inadequate to meet the requirements of the service. The amount for commutation of quarters for officers has also been increased \$2,000, made necessary by the increase of this allowance to \$12 per month per room, in lieu of \$10 appropriated for the present fiscal year, authorized

by the act approved June 23, 1879. The amount for the pay of officers has been reduced \$7,685, showing a total decrease of \$2,685 below the total amount appropriated for the current fiscal year.

I am, very respectfully, yours, &c.,

GREEN CLAY GOODLOE,

*Major and Paymaster Marine Corps*

Col. CHARLES G. McCAWLEY,

*Commandant United States Marine Corps, Headquarters.*

## No. 12.—SURVEY OF THE AMAZON.

REPORT OF COMMANDER THOMAS O. SELFRIDGE.

UNITED STATES SHIP ENTERPRISE (3d rate),

*August 1, 1879*

SIR: I have the honor to submit the following report of the survey of the Amazon and the Madeira Rivers by the United States ship Enterprise, under my command.

The Empire of Brazil includes an area variously estimated from 2,500,000 to 4,000,000 square miles, probably nearly one-half of the whole continent of South America. Lying almost wholly in the tropics, the great watershed of the Andes passes through its territories, giving it the most perfect water system of any country in the world.

Thus it would seem that nature has prepared a way for the opening up of this vast country by the most inexpensive of all systems of transportation, but in the development of which, up to the present time, little progress has been made.

The headwaters of the Parana River, flowing south on its western boundary, almost meets the Madeira, which empties to the north into the Amazon. The latter, flowing nearly east, embraces with its great tributaries the Xingu, Tapajoz, Madeira, and Negro Rivers, a belt of territory comprised within twenty degrees of longitude and fifteen degrees of latitude, and over a million square miles can be reached by the great stream and its arteries. The larger part of this vast area is unknown country, and shielded within its limits by roving tribes of wild Indians, who, taught by the experience of the past, shun all communication with the whites. From what the few explorers have gleaned from the records left by the early missionaries, the greater portion of this country south of the Amazon is a magnificent table-land, abounding in pastures, which could support countless herds of cattle, covered with splendid forests of the choicest woods and most valuable drugs.

The coast range of Brazil, Sierra Borborema, running north and south at an average distance of 300 miles from the Atlantic Ocean, is the limit of the present portion of the empire devoted to agriculture, except in narrow strips along the margin of the Amazon and Parana Rivers. Between this range and the Andes lies this great territory, watered by innumerable rivers, which finally mingle their streams with the mighty Amazon. But a barrier in the form of a range of hills extends from the boundaries of Peru to the Atlantic coast range, and breaks up the navigation of the four principal southern branches of the Amazon, viz., the Tocantins, Xingu, Tapajoz, and Madeira Rivers, into most formidable



rapids or cachuelas. These are formed only 250 miles from the mouth of the Tocantins, and about 500 miles up the Madeira. But for such obstacles, the introduction of steam in 1853 on the Amazon would have brought us into closer communication with these rivers. \* \* \*

Steam was first introduced on the Amazon in 1853, and at once new life seemed to be given to the country. It was something compared with the growth of the past, but soon reaching a limit, because dependent upon the productions of the forest gathered by a scattered population, with no inducements for emigration.

The population of Brazil is confined in a great measure to the coast, and engaged in the cultivation of coffee and sugar. The Paraguayan war was a great drain upon its resources, and the expense of which has had to be met by severe taxation. The general government collects its duties upon all imports, as well as an export tax. Besides, every province supports itself not by internal taxation, but by imports levied upon all its imports and exports. \* \* \*

The country bordering on the Amazon, as well as the lower portion of its tributaries, being subject to overflow, is not healthy, and the soil is light and sandy. It will grow plantains and mandioca, but has not sufficient depth or richness for the more exhausting crops of sugar, coffee, and tobacco.

No nation is more directly interested in the prosperity of Brazil than ourselves. Our geographical situation brings us nearer than Europe, and her coffee, sugar, and raw products of the forest we need in exchange for the manufactures and food we can furnish to her agricultural population. \* \* \*

#### RIVER AMAZON.

The portion of this great river which flows through Brazil is that with which this report is particularly connected.

From Tabatinga, the frontier post or town of Peru, to the Atlantic, it flows in all its majesty for 2,000 miles, receiving as its great tributaries from the south, the Xingu, Tapajos, Madeira, Purus, and Javary Rivers, and from the north, the Negro. In its whole course it drains but two provinces of the Empire of Brazil, those of Grão Para and Amazonas—the former embracing 532,000 square miles, the latter 550,000, or a total area twenty times that of the State of New York. It is sparsely inhabited, Grão Para not numbering over 120,000 and Amazonas about 40,000 inhabitants, by the census of 1875, these figures including every one but Indians, or about one inhabitant for every 72 square miles. Up to the introduction of steam on the Amazon, in 1854, communication was not frequent between Para and the province of Amazonas, and was confined to a few small sailing-vessels, which consumed about six months in the voyage.

Steam, however, brought about a great improvement, for since 1867 the exports have doubled; but they are still insignificant, considering the territory represented, as the following table, giving the exports from Manaus for the year 1878, and from Soopa, the other port of entry of the province, will show: There are at present two large companies that control the steam navigation of the Amazon River and its tributaries. The Steam Navigation Company of the Amazon, limited, who have enjoyed up to the present a subsidy of about \$500,000 a year from the government. This company are also in receipt of a tax of 3 per cent. upon all the exports from the province of Amazonas, in return for which they

promised to make Manaus the capital of the province, the point of departure of all their steamers, and make there a change of freights to the regular line going to Para. \* \* \* This company have the steamers Marajo, Beleue, Manaus, and Avary, all paddle-wheel vessels, built in England, from 250 to 400 tons; and thirteen smaller vessels, ranging from 80 to 150 tons. There is also the Steam Company of Marajo, which have the steamers Aonan and Arapixy, with three smaller ones. There are also the Camunan, Tocantius, Villa Bella, and a few others. These steamers nearly all make a central station at Manaus, though a few of the smaller ones are confined to the Tocantius and Lower Amazon. The voyage to Manaus, 874 miles distant from the sea, is made in from five to seven days. From the latter point these lines branch out to include the Madeira, Purus, and Negro Rivers, and to Tabatinga, 1,000 miles distant on the frontier, and from this point up the Peruvian Amazon to the mouth of the Huallaga, 415 miles, thence up the latter to Turimaguas, 65 miles, in the district of the same name.

Different locations embrace very different products. The india-rubber is brought almost solely from the Madeira and Purus Rivers, and from the Lower Amazon, on the left bank of the Macapa branch and Island of Marajo.

The Rio Negro exports the finest woods and drugs, while sarsaparilla and vanilla are brought principally from the Upper Amazon.

Some coffee and tobacco were formerly raised in Amazonas, but their culture has been neglected for the more profitable gathering of rubber. Cocoa is confined to the settled, older portion of the Amazon, and is principally cultivated below the Madeira.

Steamers burn wood entirely, and wood-yards are scattered along the river-banks wherever one is liable to come. It is sold by the one thousand sticks at \$15 a thousand, which is equal to about \$5 per cord. I found no difficulty in burning wood under the boiler of the Enterprise, provided it was dry, and in fact used nothing else during the last month we were on the river.

In 1867 Brazil declared the Amazon open to the commerce of the world. But there is not much inducement to take advantage of this liberality, for the present steam tonnage is too large for a profitable business; and so far from being an opening to the flags of foreign nations, it is my opinion that some of the present force will have to be withdrawn unless the railway project around the falls of the Madeira proves a success.

The cargoes up the river are imported through Para, and consist of breadstuffs, liquors, cotton, paint, cutlery, clothes, and small articles of foreign manufacture, such as trinkets, perfumery, and the like. Return cargoes are principally rubber, Brazil nuts, cocoa, and dried fish, to which are to be added in small quantities sarsaparilla, oil of copaiba, Peruvian bark, vanilla beans, hides, deer-skins, tallow, white pitch, bees-wax, cloves, coir, hard woods, and cedar.

I estimate at present the total exports of the Amazon to amount to not far from \$3,000,000 annually. Of this amount dried fish, the staple article of food for the poorer classes, of a value not less than \$200,000, does not go out of the country.

Though generally known under the sole name of Amazon, this magnificent river, at least twice the size of any other in the world in volume not excepting the Mississippi, is locally divided into three parts under different names. The Amazon proper extends to its juncture with the Negro, near Manaus, the capital of Amazonas, 874 miles from the sea. From this point to the Peruvian frontier at Tabatinga, 1,000 miles away



is known as the Solimocus and in Peru as the Marañon. Either of its two large tributaries in Peru, the Ucayali or the Huallaga might lay claim in size to be the parent river, but at Nauta the junction of the Ucayali and Marañon Rivers, it becomes then immeasurably and incomparably the peer of all others. As far as the junction of the Rio Negro it is navigable for a line-of-battle ship at all seasons of the year. There is, however, one point about 10 miles below the Negro where a ledge of rocks extends across, on which it is said there is found but 18 feet of water at extreme low water, but I doubt the accuracy of it, for at the time I passed over this spot there was a depth of 36 feet.

It is high water in the Amazon proper about the middle of May, though the river falls but a little before the middle of July. The temperature of the river water during July and August, above Marituba Island, was found to be 83° Fah.; below, 84° with no change during the twenty-four hours. Eighteen feet is about the difference between high and low water at the mouth of the Madeira, while at Tabatinga it is as high as 30 feet. This takes place in October after which a rise in the upper Amazon brings about a fluctuation, there being a rise and fall between that period and January, when the spring rise commences, which culminates in June.

The dry season begins the 1st of June, earlier than at Para, where it lasts more or less all the year around. This is the season of the breezes, and the trade wind from E. S. E. blows strong during the day as far up as Irides, dying out calm at night. During August and September, there are violent squalls with lightning and thunder from the eastward.

The rainy season commences in November, and continues through the winter and early spring months, but during this period the rains are far from being continuous, but interspersed with a great deal of fine weather. The thermometer ranges between 78° Fah. in the wet, and 88° in the dry, season. The nights are not oppressively warm, but are rendered disagreeable at all times by swarms of mosquitoes. There is no relief from these pestiferous insects even in the middle of the river, for the sun is not so soon down than the air becomes alive with them.

There has been a great difference in the reports of the altitudes of the different points on the Amazon. Probably none have had a standard at the ocean level, and as the diurnal fluctuation would represent several hundred feet of altitude without a base of reference for barometrical observations, they cannot but be inaccurate.

Our observations represent the difference between the height of the barometer at the point of observation and one at Para, to the recording of which I am greatly indebted to Mr. Andrew Cahn, United States consul, who considerably allowed it to be hung in his house and volunteered to take charge of the readings.

We found the elevation of the Amazon, at the mouth of the Madeira, to be 78.5 feet; and at Manaus, 84.8 feet. The distance between these two points being 86 miles, would give a rise a little less than an inch to the mile; and this is about the rate for all points from the sea to the mouth of the Rio Negro, as obtained by our observations.

The towns or villages on the Amazon, so far from flourishing, appear to be in a state of decay, judging from the empty houses on the outskirts, neglected streets, and entire absence of all enterprise or business life. Manaus, the capital of the province of Amazonas, is, however, a marked exception, it being the distributing point for all the territory above. Its inhabitants are enterprising and the indications are that it is growing fast. Above Para we have as the principal villages Breves, Marupá, Prainha, Monte Alegre Santarem, Obidos, Villa Bella, Serpa,

and Manaos. The use of steam has been detrimental to these towns in scattering their population, for formerly the products were brought to the neighboring villages in canoes and traded off for stores. Now there are hundreds of little trading-points where steamers stop, delivering goods direct from Para and receiving the freights collected, no matter in how small quantities. It is to this cause, rather than a diminution of population or decrease in the productions, that the impoverished condition of these towns is owing.

The current of the Amazon varies from 3 to  $2\frac{1}{2}$  miles per hour, according as it varies in width. The banks are alluvial, and during high water the surrounding country is inundated.

For the first 500 miles from the ocean there is but little irregularity of direction, and there are reaches of 10 and 15 miles in length, giving the appearance of an inland sea.

Above the mouth of the Tapajos the Amazon assumes a winding course, but even here it is more from a comparison with the lower portion and from the fact that large islands are more frequent, which give the channel greater irregularity. The general width is about  $2\frac{1}{2}$  miles narrowing to a mile at Obidos and Serpa, and expanding to 4 and 5 miles above and below the Tapajos. It is not only in its width but in its astonishing depth and consequent volume that the Amazon exceeds all other rivers in the world. Not less than 60 feet will be found in the channel the whole distance of 874 miles to the mouth of the Rio Negro. At Serpa and Obidos, where it narrows to a mile in width, 330 feet is obtained in the center of the stream.

The cross-section at Serpa was very favorable to an approximate calculation of volume; as the river was straight, the banks steep on both sides, and the surface current uniform. It was taken in August, when the river was 6 feet below high water, and gave the astonishing amount of 3,850,000 cubic feet per second.

The Amazon divides just above the junction of the Xingu, 200 miles from the ocean, into two great branches, known as the Macapa and the Garupa, each of which is as large as the Mississippi, and the latter, near the town of the same name, separates again into two others, Garup proper and the Vicira (Shell).

Most geographers give the mouth of the Amazon as 180 miles wide which would include Marajo Bay, really an arm of the sea, in which the Para River empties. I am, however, of a different opinion; for though Marajo Bay is connected with the Amazon by a series of lagoons and estuaries, their characteristics show that they have no connection proper with it. The water is comparatively clear, but of a moderate depth and the tide flows within a few miles of this outlet from the Amazon. The majestic, ceaseless flow of this great river is something striking which effect is lost the moment you enter the intricate channels back of the island of Marajo. Its dimensions are sufficiently grand without attempting to include the net-work of lagoons that are now the communication between Para and the Amazon, and I think the Delta may be justly said to extend from Cape North, at the northern point, to Cap Maguary, on Marajo Island, as the southern limit.

#### THE SURVEY.

Your orders to me to take charge of the survey of the Amazon and Madeira rivers to the head of navigation on the latter, and assigning me to the command of the United States Steamer Enterprise for this purpose, were received April 23, 1878. Beyond the necessity of a few



ra instruments in excess of the ship's allowance but little preparation was necessary, and I sailed from Norfolk, Va., on May 2, 1878. In addition to the officers of this ship, Mr. Sparrow, civil engineer, who had been engaged some years previous on a survey of the Upper Amazon, and Commodore Tucker, was detailed as my assistant.

We arrived off Atalia point at noon of May 23, where we anchored, waiting for a pilot to come on board next morning. The entrance to the mouth of Marajo Bay, or river Para, is rendered dangerous by numerous reefs, and, though the main channel is marked by a light-vessel, the light is too feeble to make it advisable for strangers to run for it on account of the variable currents caused by the outflow of the Amazon. Atalia Point, 20 miles south, marked by a light, may be approached at times with safety, using the lead, and here will be found pilots for the Para River. We anchored off Para on May 24. Visits were exchanged with the President of the province of Grão Para, who offered every facilities far as Obidos, the boundary of the province.

#### MODE OF SURVEY.

My instructions from the Bureau of Navigation contemplated a track survey of the Amazon to the mouth of the Madeira, and up the latter to the falls or the head of navigation. These instructions directed that the courses of the ship should be steered by ranges, and a blank form was furnished called a "deck board" to be filled out with the courses, distance run on it, speed of ship, rate of current, and column for remarks. As the bureau properly remarked, the survey was to ascertain more the irregularity of these rivers rather than an accurate delineation of their beds. Consequently the course of the main channel, the depth, the position of the bars and islands, and particularly the point of crossing from one bank to the other, together with the correct topography of the banks, were the main objects in view.

From our very commencement it became evident that running on ranges would not be practicable. The banks are fringed, it might be said, the distance with trees and undergrowth. Some tall tree could be selected, but this would be but a point, and before the course was run it would become blended with others so as no longer to be recognizable. Strictly, a compass course would not do, for this would be constantly deflected by the current. The method of observing the bearing of one point ahead was adopted, and this bearing became a course. When the ship had arrived abreast of it another course was taken, and so on. Instead of the "deck board," I adopted, with some modification, the system I used for the survey of the Atrato, and which was found by experience to fully answer all requirements, and I would recommend it to any one engaged on similar service.

For a clear exemplification I will refer to the accompanying diagram. It will become evident in the course of this explanation that its success would depend upon the accuracy of two cardinal points—correct measurement of speed of vessel, and correct astronomical determination of our position at the end of our work. To maintain the first the engines were not pushed, so that a regular speed of 35 revolutions was daily maintained ascending the Madeira against the current. Going down the Amazon this was reduced to 25 revolutions. The log was hove every half-hour as a check upon the speed, and current observations were made before starting and after coming to. As our line was mainly in the channel, the current was much more uniform than if we had run line crossing the stream. For a perfect astronomical determination of



our position at the end of each day, observations for latitude were made on stars at meridian passage, one north and the other south of the zenith and for longitude, on stars east and west of the meridian at as nearly the same altitude as possible. Summer's method was used where circumstances prevented the observation for meridian stars. The latitudes were computed using circum-meridian method given in "Professional papers Corps of Engineers, U. S. N., No. 12," and longitudes by the ordinary time-sight (Bowditch).

Observations for rate were made at Para on our arrival, Araras Island, Madeira River, where an interval of fourteen days was obtained. Also at Serpa, Amazon River, on the 16th of June and 2d of August, a interval of forty-seven days. This latter gave a most excellent check upon our chronometer rates, which were found to run very uniformly. On our return the error of chronometer was carefully obtained at Para on the 31st of August and 2d of September.

The position of Para was taken from the French chart, and may be subject to slight error; if so, the error would be applied as a constant to all our positions, and would not in any way affect the general result.

A tabulated list of these observations accompanying this report, and on inspection, the results of the two observations will be found to agree closely, while the mean was taken as a final result.

Lieut. Commander S. H. Baker used a Gambey sextant No. 74; Lieut. C. P. Perkins, a Gambey circle of reflection No. 21. A wooden tripod said to be originally the invention of Passed Assistant Paymaster Tuttle, late United States Navy, was used by both observers, Mr. Perkins having made some ingenious modification to suit the use of his circle of reflection. This tripod, standing about 2 feet high, consisted of its three legs secured with brass hinges to a flat piece of wood of about 4 inches across. In the center of the latter was a socket, in which turned an upright wooden spindle in two parts, hinged together in its center thus admitting of vertical and horizontal motion for the sextant attached to it. A hole bored through the handle of the sextant, in which a screw was inserted, secured the instrument to the spindle with a button. In this way the sextant resembled an ordinary vertical circle. With the instrument once on the reflected star in the mercury, it was not necessary to move it until the object observed had passed out of the field, and there was time enough generally to take a set of five or more observations. Without some arrangement of this nature, stellar observations with a sextant are very fatiguing; but with the sextant stationary, as above described, there can be obtained an accuracy of observations almost perfect.

The accompanying diagram is a copy of a leaf taken from the field book in the survey of the upper part of the Amazon, a little below Villavieja, and an explanation of which will plainly show the method of our survey. The unit is five minutes, which is the value of each one of the lines. The work always commences at the bottom and proceeds upwards. On the left hand are columns for day of month, time, course, magnetic variations and deviation combined, true course distance by log, current, true distance, and soundings. The right page is the field book, a line drawn in the center representing the course of the ship.

It will be observed that the time of the lower line is nine hours twenty minutes, at which time a new course east or south  $89^{\circ}$  east true was taken. This is marked by a star on the right leaf; and every change of course is so marked. As the survey was progressing down the river the left hand is the left bank, and the reverse. At nine hours and twenty minutes a bearing on the point of the island is taken south



9.25 another bearing is taken of the same point south  $50^{\circ}$  west, which fixes it, and another bearing south  $27^{\circ}$  east is taken of the other point. Now at 9.40 a new course is steered north  $81^{\circ}$  east true, showing that from nine hours and twenty minutes to nine hours and forty minutes twenty minutes have been run on the course south  $89^{\circ}$  east. As the time distance is that by log plus rate of current, or in this case eight knots, each five minutes will represent sixty-six one-hundredths of a knot. The draughtsman, in plotting, will lay off a course south  $89^{\circ}$  east, distance two and sixty-four one-hundredths knots. At the point of commencement he lays down the bearing south, then a distance sixty-six one-hundredths of a knot is laid off and at this point the two bearings north  $50^{\circ}$  west and south  $27^{\circ}$  east are taken to plot the point of island. For another example, take the time ten hours and twenty minutes. The star on the center line of right-hand page indicates a new course; we find it to be from the left page north  $67^{\circ}$  east true. We find at ten hours twenty-six minutes a bearing south  $70^{\circ}$  east was taken upon a prominent tree, and again at 10.54 a bearing south  $23^{\circ}30'$  west was taken, with the point of Isle de Conceicao and the tree in range. The draughtsman, after laying down the course north  $67^{\circ}$  east for a distance of 3.28 miles, will lay off on this line points corresponding to the distances run during the time from the commencement of the course to the time of taking the bearings. From these points the several bearings will be drawn.

Unless the system of keeping the courses in a straight line in the field-book were pursued, the course would frequently run off the page, and would require a vast amount of measuring to keep the notes clear. I think these two examples are sufficient for an explanation of the system followed. The contours of the banks are sketched in as we arrive opposite them, always taking as many bearings of the same points as necessary to fix it. This will give the distance of the river banks from the ship and the general width of the river. At times bearings were taken between the five-minutes spaces, in which cases times were recorded. For instance, at nine hours forty-three minutes a bearing south  $89^{\circ}$  east, on the course of north  $81^{\circ}$  east, as this course was begun at nine hours forty minutes, the value of the distance run for three minutes, laid off from its commencement, will indicate the point to lay off the bearing. On each side of the right-hand page are columns for remarks on each bank. For instance, at Corzalinho there were rocks, and the estimated distance was 3.5 miles. With the Madeira it was not difficult to obtain a very correct width of the river by bearings of points on the different banks, because of its numerous bends, and the fact that it rarely exceeded half a mile in width. But on the Amazon, with its long straight reaches of many miles, and intervening islands, this method was not always possible.

In our survey of the Amazon, the steam-launch ran a separate line on the side opposite to the ship. Every twenty minutes a position-flag was hoisted, at which moment the bearing of the launch was recorded, and the angle of our mast-head was taken. This gave the distance between the two, and to this would be added the distance of the bank from each observer, which was generally small, and could be estimated within 100 yards.

These positions of the launch, thus obtained, when plotted, acted as many offsets to check her survey, which necessarily could not be as accurate as ours, on account of being obliged to use a dumb compass. Every morning or evening, as convenient, the bearing and distance of

the point of astronomical position was taken, which marked the termination of the day's work and commencement of the new.

The value of such a survey as described depends upon the accuracy of the points fixed and the correctness of distance run, and, feeling aware of these facts, every safeguard was taken to insure them.

Of course a running survey of this kind would not do where constant work is needed, but for all practical purposes, for the survey of a river that is annually undergoing important changes, in order to obtain a thorough knowledge of its navigability, distances, position of islands, and general contour, it is all that is required.

In addition, the points of all islands where shoal water would be found were sounded in the launch, and two daily cross-sections were taken.

For the better accomplishment of our survey the officers were assigned to different duties.

Lieut. Commander S. H. Baker and Lieut. C. P. Perkins were selected on account of their experience in astronomical work, for the very important duty of fixing the several points of the survey. This required their constant attention every evening until near midnight, and the following day would be mostly consumed in bringing up their work. The other officers performed the work assigned them with zeal and ability.

To Ensigns Hunt and Peacock was given the duty of keeping the field-book, taking the numerous bearings required, and recording soundings.

Lieutenants Nichols, Blocklinger, Spalding, and Master Wright were in charge as officers of the deck, superintending the handling and stowage of the ship, and the soundings.

Lieutenant Blocklinger afterwards had charge of the launch in the survey of the Madeira River. Lieutenant Nichols, assisted by Ensign Hunt, had charge of the running survey by the launch, in connection with our own, from the mouth of the Madeira River to Para. To these officers my thanks are due for the interest they manifested in the work, and for the accuracy and zeal they exhibited in the performance of every duty required of them. Much praise is due to Passed Assistant Surgeon M. L. Ruth for his unremitting attention to his duties, and to which I attribute in a great degree the excellent condition of our company during a very arduous period.

#### COMMENCEMENT OF WORK.

The few preparations necessary, due to a prolonged absence, having been made, the *Enterprise* sailed from Para at noon of June 30, 1878. In this respect I was greatly indebted to Mr. Fred. Pond, at the time of the old establishment of that name, and the only American house in Para. Mr. Pond is a large-hearted American, noted for his deep kindness to any of his countrymen in distress. He gave me every assistance in his power, and in numerous ways facilitated greatly my plans. Such men as Mr. Pond our government would do well to appoint as consuls, for they have an influence for good with the local authorities that a stranger from the United States unacquainted with the language, laws, and customs could be expected to acquire only after a long residence.

The city of Para, or Santa Maria do Belene, is advantageously situated on the Para River, distant about 100 miles from the sea, and about 100 miles from Marajo Bay, a beautiful expanse of water, and of an adequate depth for the convenient working of all classes of vessels. The river



front of the town is shoal, and vessels are obliged to lie in the stream and unload by lighters.

Steamers of the larger class anchor off the port 3 miles below the town known as Forte da Barra. Para occupies to the Amazon the same position relatively that New Orleans does to the Mississippi. It numbers about 30,000 inhabitants; the business portion of the city is well built, with many handsome residences. Its importance being wholly due to the fact that it is the distributing point of the products of the Amazon; its growth has been relative to the development of the latter. In this enterprise the merchants of Para have taken the most important part, and many of them, especially the Portuguese, have amassed large fortunes. To continue the dependence upon them, the merchants here have built up a vast credit system, which holds the whole country as its debtors, but which necessarily renders them at times liable to large losses; for instance, in the almost total failure of the cocoa crop during the past year, upon which large advances had been made.

Some system of wharfage by which vessels could be discharged more quickly is absolutely necessary, and, doubtless, this will come with other improvements when Brazil awakens to the value of the vast domain drained by the Amazon, and embarks in a wise system of improvement and development.

The Enterprise steamed rapidly up Marajo Bay, which in many places is 15 miles wide, as I intended to take what might be called the back passage to the Amazon, which is the only one in use, instead of going outside and entering the mouth proper.

We anchored for the night at the entrance of the estuary of Breves, one of the network of water passages which constitute this back way. This being our first experience, I had a little fright in the grounding of the vessel lest our pilots were incompetent, but fortunately we backed off without difficulty. Just before coming to anchor, the mouth of the Tocantins was passed, the distant shores of which, sinking away in the horizon, gave the appearance of an inland sea, so wide is the river at its entrance. But, like all the other southern tributaries of the Amazon, its navigation is impeded a few hundred miles from its mouth by rapids and cataracts.

The next day was passed proceeding up the estuary of Breves, until at nightfall we reached the little town of the same name, on the western shore of Marajo Island, which is its principal settlement. Rounding to, an accident happened to the reversing gear of the engine, which at this critical moment refused to go back. An anchor was let go, but failed in bringing the ship up in time, and the Enterprise went at full speed into the bank, the head spars pushing into the thickets of the tropical forest. A whirr was heard as a large bird flew from the thicket and down on the fore-castle, dropped, to the astonishment of "Jack," a nest with little ones. They were too young, unfortunately, or they would gladly have been adopted by those who had so ruthlessly deprived them of their natural protector.

Breves is the center of the rubber trade of this region, but its situation is so low that the malarial fevers have made it unpopular, and it is anything but flourishing at present.

Our man-of-war was almost as much of a surprise as was Columbus's voyage to the natives of the new world, for the Enterprise was the first ship which had ever anchored off their town.

In the evening a violent thunder-squall passed over the town, struck the ship, and drove her crashing against the bank; but this time it was the stern instead of the bow. The rain fell in torrents, the wind roared

through the trees, and the darkness was of that intense blackness that one sees in the solitude of tropical forests. A flash of lightning revealed a long, sinuous-looking object, hanging from a branch over the poop-deck. Snake! was cried, and it was not long before that spot was deserted as the forest into which we had been pushed. The storm finally passed, and the bank being steep, the current swept us out again into the stream.

In the morning our apparent snake was seen still hanging from the bough where he was first reported, and proved to be the remnant of a large vine that had been broken when the ship struck the bank. It occasioned a good laugh, and was long treasured among the jokes of the expedition.

The river at Breves was 600 feet wide. We were still within the influence of the tide, which flows as flood for four hours, and then follows eight hours of ebb.

A short distance above Breves we entered a long, narrow passage hardly wide enough for the ship. These narrow lagoons are known as *furos*. There are two leading up from Breves, the Paracachi, which is used in ascending to the Amazon, and the Aturia, in descending. There is no room to pass in them, any vessel not observing this rule will be subject to heavy fine.

We made the passage of the *furo* Paracachi without accident, though it required the most careful steering, and our yards at times almost touched the trees. At the further end there was a sandspit, which forced us to anchor till the tide, which here rises nearly three feet, came at its full, when we passed over without difficulty.

To those unaccustomed to the luxuriance of the tropics, there is something extremely novel and interesting in the passage of the *furos*. They comprise up these lagoons, fringed to the water's edge with trees one hundred and thirty feet high, interspersed here and there with numerous members of the palm family, whose long fan-like branches hang down in such graceful attitudes. But the eye wearies at length with the everlasting tree-line that borders the banks of these rivers, and which, like the mighty Amazon, are so blended together that they lose the attractiveness due to the variety of growth that the narrowness of the *furos* permits the eye to dwell upon. I was strongly reminded of my sojournings of previous years upon the Atrato, which has pretty much the same flora, and I looked forward with eagerness to our approach to the great Amazon. Another day yet elapsed before we reached the point where the Amazon bifurcates into its two branches, the Maca and Garupa, and it was late at night before we anchored at this point.

I shall never forget the feelings that this mighty river inspired in me. In the morning we rounded the point where we had anchored, and came out upon the open river rolling down in all its resistless majesty. For miles broad at this point, stretching out to the westward until it was lost in the dim outline of the distant horizon, it seemed hardly possible that this was a river almost dividing a continent.

Can it be possible, the mind asks the question, that nature reproduces herself year after year, and carries back from the ocean, borne in clouds overhead, the vapors that, condensed, yield a supply sufficient for the feeding of this tremendous flow of water, amounting to many millions of cubic feet a minute?

Our ship was kept close to the southern bank to avoid the strength of the current, and we thus had the full flow of the river to our right as we ascended. In the distance to the north the blue Almerine hills made a pleasant background to this picture of nature's grandeur, particularly



enjoyable, because it was rare on the Amazon to have any break to the forest-girt banks.

A good idea of the width of the Amazon is shown in the fact that at this point we took a series of compass deviations by steaming around in a circle and observing the runs upon each point of the compass.

In the afternoon of the day we entered the Amazon, June 7, 1878, we stopped to speak a schooner that was towing down the river. Upon starting ahead a crash was heard in the engine-room, accompanied by an escape of steam up the hatch. As soon as the excitement had subsided it was found that the connecting-rod bolts of the after-engine had broken short off, which let the end of the rod down into the well, and the crank, in making a revolution, had struck and badly bent it.

This accident filled me with apprehension, for the success of the expedition was entirely dependent upon the motive-power of the Enterprise.

Far away from the mouth of the Madeira, with no means of reaching there outside of ourselves, at first I was inclined to feel disheartened, but a second thought that we could move along slowly at first with one engine was reassuring.

The accident was caused by water in the cylinder, which the relief valves failed to carry off. To straighten so large a piece of machinery as our rod was no slight undertaking. But it is an unfortunate state of affairs when the stores of a man-of-war will not furnish expedients to repair. Accordingly our little forge was taken forward and placed in the fore hatch, a hearth of bricks built around it, so as to enlarge its area, and the rod hung in chains over it from the carlines of the topgallant forecabin deck; a moderate heat was applied, and a hydraulic jack operating from the deck overhead, by slow stages, brought it to nearly its original form, sufficiently so, that, practically, it was not fore-shortened. It was found, too, that the connecting-rod bolts could be shifted end for end. All this required several days, but in the meanwhile the engines had been disconnected, and the ship proceeded up the river at a rate of almost five knots an hour, the condenser being temporarily changed from a surface to a jet condenser by applying a stream from the donkey-pumps. This gave a poor vacuum at first, but afterwards, at the suggestion of Assistant Engineer Shewell, the flow from the donkey-pumps was divided in two streams or jets with a most marked improvement, being able to maintain a vacuum of sixteen inches.

After making the required repairs we proceeded ahead very well with both engines for twenty-four hours, when, attempting to take up some of the lost motion of the after engine, the safety limit was passed and, with another crash, the connecting-rod bolts gave way, letting it down into the engine well.

We were now in a worse plight than before, and it seemed as though circumstances would combine to deprive us of our motive-power. It was both dangerous and awkward to work the ship with a single engine, as it was liable at a critical moment to get on the center, and the assistant engineers are entitled to great credit for the skill with which this single engine was manipulated. The expedient of turning the bolts was no longer available, and new bolts must be supplied. It was fortunately found that the transporting-axle of our large pivot-gun was the exact size, 3 inches. Four bolts were accordingly cut from it, and threads at each end of the bolts worked in by hand. Every one knows how difficult this must be, for the smallest inaccuracy would prevent the thread from entering the groove. That we did it, however, was owing only to

the skill and faithfulness of one of our machinists, James Moore, assisted by another of the name of Chambers.

I do not hesitate to pay this compliment to Moore, that to him, under the circumstances, though humble his station, I am indebted more than to any other person of this ship. So far no notice has been taken of his services by either the then chief engineer, Elijah Laws, or the Bureau of Steam Engineering, and I think that such meritorious conduct is entitled to some recognition from the Navy Department.

The slow progress of the ship upstream and the rapid falling of the Madeira River, made it essential that I should so far modify my plans as to commence our work on that river, and proceed with the Amazon afterwards.

We arrived off the mouth of the Madeira at 4 p. m. on June 17, having been fourteen days making a distance of 800 miles, and at once commenced the survey of that river.

Our survey of the Madeira River, of which a detailed account is given in the latter half of this report, ended by our return to its mouth on the 24th of July.

The next day was spent in measuring a base line of 400 feet on the north end of Madeira Island, and fixing by triangulation the east and west points of the Madeira, the east and west points of Trinidad Island as well as Antuz Point, on the Amazon. The north end of the base line was fixed by stellar observations.

Left our coal lighter at anchor at the Madeira in charge of its crew of two Tapinjos Indians, and, getting underway at 4 o'clock p. m., steamed all night up the Amazon, carrying not less than 10 fathoms of water.

*July 26.*—Approaching the river Negro, a curious phenomenon presents itself. The general course of the banks of the Amazon seems to connect with those of the Negro, as though they were of the same river, while the Amazon, turning off suddenly to the south, and shrinking temporarily very much in size, seems to have lost its majestic proportions and yielded the palm of greatness to its tributary, the Negro. The color of the water of the latter is nearly black, and does not mingle completely with the Amazon for several miles. So sharply are the waters of the two rivers defined, that a vessel crossing their line will be found with its bow in black water and the stern in yellow. The Negro, from its junction with the Amazon, opens rapidly into a river of such proportions as might be considered a bay rather than a river, some 4 miles wide and 12 long.

On this bay is situated the town of Manoa by far the largest on the Amazon, and indeed the largest city in Central South America. It is very picturesquely placed, on a series of low hills skirting the bay. The houses, mostly of one story, are neatly constructed, plastered, with the sides either painted or covered with painted tiles. It is as regularly laid out as the nature of the ground will admit, and the principal streets well paved and lighted.

Manoa contains probably 6,000 people, and is the capital of the province of Amazonas, which has a population of about 100,000, of all classes. It is the residence of the president of the province, and is the port through which passes all the trade of the rivers, Purus, Negro, and Solimões and its tributaries, as the Amazon is termed above its junction with the Negro. The Brazilians keep a small naval flotilla here, consisting of a side-wheel gunboat, and three large steam launches, mounting a howitzer, the whole commanded by an officer of the rank of captain in the fregate. It is the principal terminus for the steamers of the Amazon.



Navigation Company, and from whence they depart for all the numerous tributaries of the Amazon.

Manoas from its situation should become a town of importance. But started with capital from Para, the latter has retained in it its grasp, and until the merchants of Manoas can succeed in freeing themselves from its rival, it will continue to be as it is now, only a feeder for the older and more opulent city. The cathedral occupying a commanding situation in the center of the town, is a fine edifice, as it indeed ought to be, if the time and money spent on it are criterions, as it is said to have been fifteen years building, and to have cost a half million dollars. There is a pleasing absence of the tinsel and tawdry coverings for the numerous saints common to Catholic churches in foreign countries, and the altar and frieze of the choir is a very handsome structure of cut stone brought from Portugal.

*Amazon River, July 31, 1878.*—Got underway from Manoas at 8.30 a. m. The river off Manoas is very deep; 500 yards from the shore is found 45 fathoms, and this ship anchored abreast the cathedral, 300 yards from the shore, in 23 fathoms. We passed the junction of the Negro and Amazon at 9.30 a. m. The water of the former is found on the north shore for 4 miles below its mouth, before it is entirely mingled with the Amazon. At about 8 miles below the junction of the Negro and Amazon, abreast the west point of the island of Morodo, and extending in a line across the river to the north shore, is a reef of rocks, whose exact position is unknown, and makes this the most dangerous point in the navigation of the Amazon from its mouth, when the river is low, during October and November. The channel runs about 400 yards from the south bank, and had at this time 7 fathoms. Allowing a fall of 3 fathoms more would give 4 fathoms at extreme low water. Passing slowly down the river, steaming 4 knots with a 3 knot current, at 2 p. m. came to in 8 fathoms at the upper end of island Eva. High land along the north shore the whole distance from the Rio Negro to anchorage. South shore low. Light easterly breezes during the day which died out at sunset; calm during the night, some mosquitoes.

*August 1.*—Underway at 7 a. m. Attempted to work with one pair of boilers, but found it did not give sufficient steam reserve, and, therefore, started two more. Current fully 3 miles per hour; speed, 4 knots. At 1 p. m., off west end of Trinidad Island. Took on board 2,000 sticks of wood from a house on left bank, just below Trinidad. Then proceeded back to old anchorage off the mouth of the Madeira. Some bluffs 70 feet high on north bank; south bank low. The alluvial bank of the Amazon now about 10 feet out of water. Light breeze from eastward set in at 7 a. m., and died out to perfect calm at sunset. Night very close and hot; swarms of mosquitoes. Hoisted out steam-launch and prepared her for service in connection with our survey.

*August 2.*—At 7 a. m., got under way from Madeira taking our coal-lighter alongside, and bid it a final farewell. Both banks of the Amazon from the mouth of the Madeira to below Santarem are lined with cocoa plantations, which are generally planted on a narrow strip back from the river, not three hundred feet wide. At all the plantations that I visited the trees seemed very old, and, from what I could learn, they date back as far as the Portuguese. The crop is an uncertain one, and I should judge not very profitable.

A coccol or cocoa plantation is an exceedingly pretty sight; the trees interlock their branches, and with their large leaves make a shade impenetrable to any ray of the sun. The ground is level, covered with a carpeting of dead leaves, and the large golden-colored fruit hanging by

themselves from branch and trunk show through the green with a beautiful effect.

There are two harvests—one in January and February, the other, largest, in June and July. The fruit somewhat resembles a large or ripe cucumber; when gathered the shell or pod is broken open and seeds spread on raised platforms to dry. They have to be frequently turned, and in about a week are ready for the market. The seeds planted in garden-beds in August. When the plants come up they must be carefully protected by arbors of palms from the sun, as well as served against insects.

In January the plants are transplanted to their permanent place where they are set out in squares of 4 feet apart. Indian corn plantains are planted between the rows to give them protection against the sun while young, which are grubbed up as soon as they commence to press against the trees.

The launch in charge of Lieutenant Nichols, with Ensign Hunt, at the same time as the ship, for a survey of the rocks on the south of Trinidad Island, and survey of the south shore, while this ship surveyed the north bank and channel. Arrived off Serpa at noon. Found 10 fathoms in middle of river off the town. The river was so deep on the south shore and rocks lining the Serpa side that I tied the ship up to the south bank, with 8 fathoms close to.

Serpa is a town of some consequence, as the custom-house for provincial exports from the Madeira is located here for the collection of duties from produce that does not pass through the port of Manaoas. It has a population of about 700 people, and the district of Serpa will number near 2,000 persons. There is but a small export trade of rubber, coffee, and dried fish. Mr. Stone, an American, resides here, owning a cattle ranch a short distance below the town. He is an intelligent man, and much information on the affairs of the country may be obtained from him. Currents, 3 knots per hour.

The volume of the Amazon at this point, as calculated from our cross-section allowing a current of  $2\frac{1}{2}$  miles per hour, amounted to 3,858 cubic feet per second.

*August 3.*—Passed down to the south of the long island of Serpa. The steam-launch in the parana of the north bank. Beautiful weather, light, pleasant breeze from eastward. Current, 3 knots, which may be regarded as the general average rate of the Amazon. Came to anchor at 2 p. m., off the Furo Resaca, on the south bank, in 12 fathoms. Furo Resaca is a long igarapé, which connects with the Furo Canum, affording navigation with the Maderia or as far as the Tapajós to Santarem. The steam-launch ran a cross-section and found the width of the river at this point 3 nautical miles.

*Sunday, August 4.*—Remained at anchor.

*August 5.*—Sent the large iron lighter in tow of the steam-launch to the shore for wood. Took on board 1,700 sticks. Passed down the river as far as the island of Friexal, at the head of which we came to anchor in 10 fathoms. Found the current to-day about  $2\frac{1}{2}$  knots. The banks of the Furo Resaca to the island Friexal are low on both sides, and but sparsely inhabited. On the north bank, opposite the anchorage, there are high hills which bound an igarapé, which comes into the Amazon again at the eastern end of the island of Serpa. The volume of the Amazon, measured at this point gave 4,094,396 cubic feet per second.

*August 6.*—Made 30 miles by river and anchored at 1 p. m., at the mouth of the Parana Pacoral, which is used by all steamers, up the river, in preference to the main river, which is much longer. Came



with stream-anchor, and on account of defective link, and also partly because anchor was let go before ship was headed upstream, the chain started at 60 fathoms. Let go port-bower anchor. The buoy attached to stream-anchor refused to watch, and though we spent one day in dragging for the anchor, did not succeed in picking it up. The nights are much more sultry as we pass down, and mosquitoes are very numerous and troublesome.

*August 7.*—Got under way at noon, and passed down the right bank of main stream. The river along the islands of Pacoral and Onces is very wide, and a broad plain makes out from these islands. Arrived off Villa Bella at 5.30 p. m., and anchored in mid-river in 12 fathoms of water. The Brazilian chart gives too much water in cross-section opposite the town. The pilot reported rocks off the town of Villa Bella. Sent steam-launch in to sound, but could not find less than 10 fathoms close to bank. The volume of the Amazon, as calculated from our cross-section, gave, at this point, 3,899,149 cubic feet per second.

*August 8.*—Visited Villa Bella for a short while this morning. It is located on a bluff about 60 feet above the river. Marks on banks indicate a fall of about 5 feet thus far in the Amazon. The town presents rather an imposing appearance from the river, with its long row of one-story white houses. But on going ashore one finds the whole village consisting of the single front street, the suburbs being confined to half a dozen mud huts. The town owes its chief importance to being the point of export and import for the Ramos or Carmanan, which extends for 150 miles, and connects with the river Madeira, 60 miles from its mouth. On this inland river is situated the town of Manheés settlement of the Mandirwea Indians, noted principally for its manufacture of the much-sought-for guarana. The land bordering on the Ramos is spoken of as being of more than ordinary fertility. Considerable quantities of cocoa are also exported from Villa Bella; as also dried pirarum and a little rubber. The population of the town is about 400, and of the district 5,000. Came to at 1 p. m. at the head of the islands Caldeiros. The river forms two channels at the head of these islands, and while there is good anchorage, it must be approached with caution from the south shore, as there is but 3 fathoms quite a distance from the island, which would only give a few feet in low water. A short distance above the Caldeiros islands are the Sierras Pauntin, the boundary line between the provinces of Para and Amazonas. They are remarkable for rising directly up and a very steep slope from the river bank, to a height of 500 feet. It is the only instance of high hills jutting abruptly into the river from its mouth to Manóas. These sierras are heavily wooded from their base to summit. Fresh breezes from the E.N.E. till 2 p. m., then a perfect calm. Night very hot and sultry.

*August 9.*—Got under way at 7 a. m. Sent launch down the north side of the Caldeiros. Fresh breezes from N.E. from 7 a. m., and considerable sea on the river. Spoke a steamer at noon bound up the Parus, which reported that the delayed steamer Rio de Janeiro had arrived six days behind time at Para, which will assure our getting a mail upon reaching there. Sent the steam-launch around inside the island Macaraassu; found quite a large village known as Juruty. Anchored off Santa Ana at 1.30 p. m. Though there is good anchorage, care must be taken in approaching from across the river, as there is nearly a dry bar with only 6 feet, not more than 300 yards inside of 12 fathoms. Pulled up little river of same name for some distance, and found it wide enough for the gig to pass easily. Cocoals of cocoa lined the banks, and I was informed it took a canoe a day to reach the head of the creek,

upon which were many houses. Cattle may be obtained here from the padrone. During our stay at Santa Ana, on our passage up, the little settlement was engaged in a "festal" in honor of the christening of a few babies that had been born during the year. Had a great many mosquitoes, but a light breeze from the eastward tempered the air, and made it less close than previous evening.

*August 10.*—The steam-launch left at 6.15 a. m., to pass around the north of the island Bon-Jardin, while we got under way later, and passed down on the south side, which is the one principally used. The river from Bon Jardin to Obidos runs nearly straight, in an easterly direction. Arrived off Obidos at 2 p. m. The water is very deep close aboard the town, there being 45 fathoms 100 yards from the shore, and a strong eddy or counter-current at this distance off. Came in slowly to within 100 feet of the beach, and anchored abreast of, and at the foot of, the bluff, upon which the fort is located, and a little west of the war battery, in 13 fathoms. Got a line out immediately from the port bow to the shore, and also one from the port quarter. Ship laid very quiet, stern to the westward, head downstream, with the sternpost just touching in soft, muddy bottom.

Obidos is a scattering town of about 500 inhabitants, skirting the river and extending back half a mile. The bluffs upon which it is located measured by my aneroid gave 80 feet for the lower, then rising to 100 feet, upon which is a small chapel dedicated to Our Savior, from the portico of which there is a fine view up and down the river.

Obidos, from the many unoccupied and ruined houses, would appear to be in a flourishing condition. It seems to be affected with the same apathy as one sees in all interior towns of South America; or, enough labor is undertaken as will furnish the bare necessities of life. It is the last town on the Amazon within the limits of the province of Grao Para. It is the only fortified position on the river, there being a battery of eight 32-pounder guns on the bluffs which, however, could be passed without difficulty at night. This is the extreme point, 100 miles from the sea, at which the tide makes itself felt, there being a fluctuation of a couple of inches.

The district, which extends back indefinitely and up and down both sides of the Amazon, contains about 15,000 inhabitants. There is considerable trade in cattle, the rolling country affording good pasture, and all the Upper Amazon received its supplies of beef from this place. The banks of the Amazon are in this vicinity generally tall, up with cocoals, and Obidos, in good years, will ship 30,000 arrobas of cocoa, also some 500,000 pounds of castawhas or Brazil nuts, and some oil of copaiba. The river at this point is but 2,200 yards wide, and in the middle 55 fathoms, the greatest depth we have yet found in the Amazon.

*August 11.*—Passed a quiet Sunday at anchor; a good many persons visited the ship in the afternoon.

*August 12.*—Got under way at 7 a. m., and stood down south bank of the launch going to the north of islands. Anchored at 2 p. m. off a place called Lago Grande, the proprietor of which was engaged in the manufacture of tiles.

*August 13.*—Under way at 8 a. m., and met the launch around by the island Marinarituba. At the end of this island the Amazon makes a sharp turn to the south, and at the angle of the bend comes in the long para. Abreast of the island Paranatoba there is a large praia, which the pilot, not knowing the channel, attempted to cross; soundings continued to decrease to 3 fathoms, when we anchored; sent out a boat to sound



and found that the channel, with  $6\frac{1}{2}$  fathoms, ran down along the south bank. Got under way at 1 p. m., and stood over to the south side. Arrived off the mouth of the Tapajoz at 4 p. m. The water of this river is clear, and the sandy bottom imparts a greenish tinge to it. Here was presented the same phenomenon as at the mouth of the Negro—the water of the Amazon not mingling with the Tapajoz, a sharp dividing line between the two rivers extends across the mouth of the latter. One mile from the mouth is the town of Santarem, the largest place on the river bank. It is beautifully situated on rising ground, in front of which is a beach of white sand, and the junction of the two rivers gives a large river front which adds much to the situation. The country back of Santarem is hilly, as are also the banks of the Tapajoz, with numerous cattle ranches on the latter. The merit of the discovery of this place and of the friendly relations that existed between the Portuguese and the Indians is due to Capt. Pedro Texeira, who, in 1626, under superior orders, went up the Amazon in search of Indian slaves, and brought none from Santarem. Forty years afterwards the Jesuits, at the instigation of the local government, founded a mission here. In 1694 a fort was built on a small hillside to the east of what was then the village and called the "Fortress of Tapajoz." It was intended to prevent any outsider from entering the Tapajoz, and to guard against any proposed descent of the Amazon. Under the protection of the fort many houses were erected, which formed the nucleus of the future city. In 1754 the missionary parish and neighboring village were consolidated, and the title of town given to it by the Government of Para. In 1833 the name of Santarem was changed to Tapajoz, but in 1848 a provincial law restored its former name, and it was made a city. Population of Santarem is about 3,000, and the district 5,000; this was a place of considerable importance with the Portuguese, and, judging from appearances, the ratio of improvement has not been rapid. Borracho from the Tapajoz, some guarana, cocoa, castanha nuts are the principal exports. Santarem is interesting to Americans as the place where a number of American colonists from the Southern States settled immediately after the war. Most of these became discontented and returned home in the Quinnebaug; but some ten or twelve families remained engaged in the cultivation of the sugar-cane, and I am glad to say they speak encouragingly of their prospects, and are making slow but sure progress ahead. The dry season commences here in July and lasts till November.

*August 14.*—Through ignorance on the part of the pilot, though anchored in 7 fathoms when the ship swung to the ebb, it grounded aft in  $4\frac{1}{2}$  fathoms, the stern tending in shore. The better anchorage is off the south end of Santarem, where the water is not so bold. Off the north end the water is deeper, and a ship must anchor in from 12 to 14 fathoms to keep off the bank when swinging inshore. The action of the tide upon the Amazon produced a regular ebb and flow in the Tapajoz while we were at anchor. This is the more singular as the series of current measurements every hour for twenty-four hours failed to show any difference in its velocity owing to the influence of the ocean tide, which is just felt on the Amazon 600 miles from its mouth. I account for this curious incident of an ebb and flow off Santarem by the fact that the Tapajoz, at this season flowing from the south, and through a drier region, is lower than the main river; while the Amazon at its normal state, uninfluenced by tide, would be higher and would back up the Tapajoz till the difference of level of the latter became equalized to the greater height of the Amazon. This would of itself cause slackwater for a time at the mouth of the Tapajoz. Therefore, when the level of

the Amazon is raised still more by the pressure of the inflowing tide, causes at certain times a backing up of the Tapajoz and results in slight rising or the same as a flood-tide. Nothing of this ebb or flow met on the Amazon at this point.

*August 16.*—Remained at Santarem till to-day, to bring up our survey which was behind. Took on board a little orphan American girl, Ali Stroope, for passage to the United States. Under way at 10 a. m., and at 3 p. m. anchored off the north shore abreast head of island Barier. The most dangerous shoal that I have met on the Amazon makes out from the north shore for 500 yards abreast this island, and navigators should give it a wide berth at night. During the day it is marked by a smooth line on the river surface. Upon anchoring, though we approached it at an acute angle, the sounding jumped from 9 fathoms to 1 in a single cast of the lead, and the ship struck forward heavily, but the bank was so steep that, with the helm hard astarboard and the current, she swung off at once without stopping.

*August 17.*—Under way at 7 a. m. Launch surveying north shore. At 1 p. m. anchored abreast the Parana Monte Alegre, off and a little below the head of the island Friexal. There is excellent anchorage here in 10 fathoms. Visited during the afternoon in the steam-launch the town of Monte Alegre. This is on a beautiful parana of the Amazon, 5 miles from its mouth. An igarapé connects this parana with the Lago Monte Alegre. It was founded by missionaries of the "Fathers of Piety" early in the seventeenth century on the bank of the river. Afterwards it was moved to the top of the hill, when the Indian village of Gurupatú became the city. There is first the fort, consisting of 200 people, close to the shore. The mountain road is then ascended to the town. Halfway up is a spring of delicious water running out of the sandstone. The top of the hill is the table-land, containing probably six or seven hundred acres. There is a large plaza, upon which is quite an imposing church for the neighborhood. The houses are arranged round the plaza and a little off on the slope. The view of the Amazon and surrounding campos, the freshness of the air, the wide grass-grown plaza, all combined to make it the pleasantest scene we have encountered in our Amazon experience. Large numbers of cattle and horses graze on the campos, which, with dried fish, make the principal exports. Here can be purchased the rudely-decorated calabashes, known as cujas. The prettiest cujas are found at Monte Alegre and Breres. A cuja is a drinking-cup made from a dried gourd. The rich black ground color is produced by a dye made from the bark of a tree called comaten, the gummy nature of which imparts a fine polish. The yellow tints are obtained from tabatinga clay. The red is made with the seeds of the urnea or anatto plant, and the blue from the indigo which is planted around the huts.

*August 19.*—Passed Sunday at anchor off Monte Alegre. Had a severe squall wind, with little rain, at 2 a. m. Got under way at 7 a. m. Buoy foul of the propeller, but fortunately chafed off. Standing down the river steam-launch on south shore. Arrived off Prainha at noon. Pilot said there was good anchorage. Stood in carefully, carrying down water, within 300 yards of the town, when suddenly shoaled from 15 to 5 fathoms, and immediately to one and one-half; grounded forward, but backed off without difficulty. Stood over to island Urnara in the middle of river. Water very deep close to latter, and anchored alongside grass in 7 fathoms. Found a fall of tide of at least two and one-half feet, but current remained of about the same force. Prainha is a small villa of about 300 inhabitants, and perhaps 2,500 in the district. It exports some cattle, 200 head a year, and a small amount of cocoas and castanets.



*August 20.*—The channel here lies down the north side till the island Aearuassu is reached, when the south bank is followed to the junction of the Gurupa branch. There is a dangerous shoal off foot Itanda Island to look out for coming up stream at night. Anchored at 3 p. m. at the head of Jurupy Island in 8 fathoms, good anchorage. Very strong northeast breeze; ship riding over the anchor. Could not find firm ground at head of island, and observation party had to cross to north bank, and did not return until 2 a. m. From Prainha to the sea, the rise and fall of the tide rapidly increases from about 3 feet to the maximum. When the tide is out it leaves the banks surrounded by soft mud, making them difficult of access.

*August 21.*—Under way at 7 a. m. The height of Sierra de Intahy in sight all day yesterday and to-day, forming a pleasant change to the usual background of green; and the sun setting behind them has given very beautiful sunsets. The usual channel extends down the south bank. Ran a cross-section over to the Resqueiro Islands, found 8 fathoms and more across to the islands; found a channel of 8 fathoms in the middle between the two lower Resqueiro Islands by which a ship can pass from south bank to the middle or north bank of the river. Pilot said these were connected by a praia and no passage through. At 1 p. m. came to on south bank, but having 24 fathoms close to it, ran in and tied up to the trees in 5 fathoms, nearly opposite to village of Almerim. Visited the latter in the afternoon. It consists now of but half a dozen houses, but from the ruins it might have been in the time of the Portuguese a place of more consequence. There are the remains of an old fort at the bluff, which an intelligent black man said was built by the Dutch. As the latter nation were driven out of Brazil in 1654, it would make the old ruin over two centuries old.

*August 22.*—Under way at 7 a. m., standing down on south bank, and anchored at 1 p. m. at junction of main Amazon and the Gurupa Branch. Sent ashore and measured a base line of 1,100 feet for the purpose of establishing neighboring points. High water at 3 p. m.; rise about 5 feet, ship swinging, however, all the while to the ebb. This night, the first one for three, without a heavy wind squall. Light winds during day and night.

*August 23.*—Established surrounding points from base line, and point on opposite bank. Took all the coal remaining in lighter alongside except three tons for launch. Under way at noon, passing down Gurupa branch of Amazon. Passed mouth of Xingu at 1 p. m. At 4 p. m. came to off and just above the town of Gurupa. Found the Brazilian charts at the junction of the Gurupa and main river very much out. By chart, the village of Gurupa is distant 30 miles from this point, while our run made it but 18. The Brazilian maps indicate rocks off the town. Surveyed it carefully, the river front, and found the navigation perfectly safe within 300 feet of the shore. The Gurupa branch is deep and about 1½ miles broad. The Amazon bifurcates at Point Jariuta, the head of Gurupa Island. This point consists of about 4 feet of alluvium, overlying hard, blue clay, which presents an impassable barrier to the further advance of the Amazon, though it receives and divides the mighty forces of that river. The Gurupa branch divides again opposite the town of Gurupa, into the Gurupa branch proper, and another known as the Vieira or Shell. Set out tide-gauge and found high water August 25 to be at 4 p. m.

*August 26.*—Anchored Sunday; under way at 6 a. m. Found the extreme rise and fall of tide to be 5 feet. It is within two days of spring tides, so that probably the tide ranges between 4 and 5 feet except dur-



ing the rainy season. We were anchored on the slack-water side, and the maximum current during the ebb was 2 knots; at the time of high water this was reduced to 1 knot. The town of Gurupa, though picturesquely situated on a rocky bluff 40 feet high, overlooking the river, presents such a dilapidated appearance that it gives the impression that at one time it was much more flourishing than at present. Gurupa was formerly a village called Mariocay, inhabited by savages. The Dutch took this place about 1620, fortified it, and, having made a treaty with the Indians, remained until the Portuguese, having received information of the fact, arrived with a force sufficient to drive them out. In 1631, fearing new assaults, the colonial government fortified Mariocay with a fort, the ruins of which can still be seen to the eastward at the foot of the district. The Carmelites established a mission here in 1674. The San Francisco friars also settled here in 1695, and remained until 1774, when all the friars of this order were sent to Portugal. In fact the advent of steamers has been a blow to the larger villages, these now touch at all the points where there is any cargo, no matter how little, to give or receive, the result of which is the establishment of a great many petty trading posts, which supply the immediate count and absorb the traffic that used to concentrate in canoes at the towns. The latter, therefore, now only maintain their existence by being the voting centers of the districts, at which will assemble all the male inhabitants of the parish once or twice a year, and celebrated as a great day.

Agriculture is almost extinct. A small portion of the inhabitants still attempt to raise mandioca, but nearly all this article is imported; a better proof of the laziness of the villagers, for mandioca will grow for itself if the weeds are kept away. The cocoa plantations planted thirty years ago may be said to be abandoned, as only an insignificant part of the fruit is harvested for exportation, together with small quantities of the sarsaparilla, Brazil nuts, and rubber, which is the most important of its scanty exports. The sugar-cane is only cultivated by two of the principal residents, and there are but two cane-boiling establishments and two rum distilleries, the productions of all of which are consumed in the district. While there are more than 10,000 head of cattle in the district, but little attention is paid to breeding. A few are produced in the interior, but the business is not properly conducted, owing in a great degree to the want of proper clearing near the river above the annual overflow.

This description of Gurupa, once a flourishing village, is unfortunately but too common a type of civilization in the Amazon Valley, where nature in its bounty has supplied such abundant stores of food, plantains, and the actual necessities of life, as to result in a *dolce f* *niente* lassitude, which envelops the whole country.

Spoke at 7 a. m. steamer Canumén, but was disappointed in not getting any American papers. At 10.30 went alongside of wood-yard, and took on board about 2,500 sticks of wood. Standing down the Vieira (Shell) branch of the Amazon till 2 p. m., when we came to the mouth of the Furo Itaguara, where steamers turn off for Para. The Furo is separated from the Amazon by Vieira Point; off the latter, for 300 yards from the water shoals to 3½ and 4 fathoms; outside this 5 fathoms is found the opposite shore. Just below Vieira Point is the small island Caboc. There is good anchorage here, as 6 fathoms will be found from bank to bank. The channel runs on either side of the island. Anchored at 4 p. m. Observation party ashore at Vieira Point. Fine night.

August 27.—Under way at 6.30 a. m. Passing during the day through



uros, Itaguara, Lemão, Tayapura. Anchored at 2 p. m. off the north Furo Parachachi, the narrow passage through which the ship came the way up. These Furos will average 700 yards, with depth varying from 5 to 15 fathoms. The channel a little toward the concave side. The passage through these narrow channels is the most picturesque on the voyage from Para to Manaos. Vegetation and water meet, the roots constantly wet from the river, and stimulated by the hot sun, exhibit the rankest profusion of tropical growth. Apparently where a vine can find room to cling, it hangs in a graceful luxuriance, broken here and there by the pretty Javary palms. At the close of the dry season the effect is particularly beautiful by the change in color of many of the trees. Looking ahead, one sees luxuriously blended all the shades of green, red, and brown. Ship swung one hour to flood, showing this point to be the highest at which the tide overcomes the current.

*August 29.*—Sounded yesterday off the mouth of Parachachi, and found the channel very narrow, with but  $3\frac{1}{2}$  fathoms, which would give  $4\frac{1}{2}$  fathoms high water. The shoal water is not, however, more than 300 feet wide, with six fathoms on sea-side. Steamers are obliged to ascend the Parachachi Furo and descend the Aturia to the Breres River under the penalty of a heavy fine if disobeyed. Under way at 6.30 a. m., passing down the Tayapura Furo some 6 miles till the mouth of the Aturia trait was reached. Had 4 fathoms at mouth, then deep water through. It is about 8 miles long and much wider than the Parachachi, as we had no trouble in passing with lighter and steam-launch secured abreast. The Aturia comes into the Breres River some 3 miles below the point where the Parachachi is entered. Passed Breres at 11 a. m. A long raia makes out from south point of the mouth of Breres River well along to the end of Dia Island; care must be taken not to approach within less than five fathoms. Anchored at 3 p. m. off Guajara lights. Usually and cloudy during the first part of night, but the weather cleared sufficiently during middle watch to obtain observations.

*August 30.*—Under way at 5.30 a. m. High water yesterday evening at 7 p. m., several hours later than at Para. At 9.30, passed the town of Curralinho, which seems to be a larger place than Breres. At 4 p. m., found a wooding station abreast island Xipotuba; stood over to it across the channel and found 6 fathoms to the shore; pilot knew nothing of the state of the channel beyond the beaten track. Took aboard 1,500 sticks and left at 5.30. Passed by the island Janaraca, and anchored after dark, at 6.30 p. m., off the lights Goiabal. There is a very long shoal and spit makes off the island Janaraca, upon which there is not more than 2 fathoms; also a shoal off Goiabal light. Going up or down without a good pilot, it is well to keep over to north shore, keeping lead going. Going down, do this till 5 fathoms are struck on the Goiabal spit, when stand off at once to southward and westward. Fresh squall and wind at 8 p. m., and heavy rain at 4 a. m.

*August 30.*—Carried out 5 fathoms from anchorage. Under way at 5.30 a. m., and anchored at 11 a. m., Cotejuba light bearing northeast, distant one mile. Burned wood alone under six boilers and made 45 revolutions—7.2 knots.

*August 31.*—Dispatched the steam-launch in charge of Lieutenant Nichols, to make a survey of the shoals of Gozabal light, which position we left yesterday. Under way for Para at 11 a. m., half-tide. The pilot got out of the channel and ran the ship aground, but with a rising tide backed off. A good guide for this channel is to head for the light on Cotejuba till the cathedral of Para is opened out, then steer so as to cut in the opening between the two islands, and keep this closed till

you head over for the point on the right hand going up. From point the chart is a good guide, but vessels of the draught of the Enterprise, 18 feet, should not attempt to go up until half-tide. The difference between high water at Breres, nearly the highest point within influence of flood tide, and Para is about three hours. If steamers wait leave the latter on the last of the ebb, they will be able to carry flood with them nearly the whole way to the former point. This is important to remember, for the ebb runs very strong.

The Enterprise arrived off Para in the afternoon after an absence of three months, having during this period completed a running survey of 1,500 miles.

*Santa Maria de Belem, or Para*, situated on Para River, 100 miles from the Atlantic, is the seat of the provincial and Roman Catholic diocesan governments, and the place where the provincial assembly meets. It is the port of all the commerce of the province, and, as the receiver and distributor of the products of the Amazon, has before it a splendid future. It contains many public edifices, banking establishments, various mercantile companies, an excellent naval dock-yard, a college for girls, students, and, in addition, several schools, attended by 403 male and 1,418 female students. In the municipality outside of the city there are twenty-one primary schools, attended by 1,418 scholars. The health of the city, except in times of epidemic, is generally satisfactory. The climatic disease can be traced to a want of cleanliness. The streets are only cleaned by rains, and when these fail on a number of consecutive days there are places which become unbearable. Para is destined to become, if not already, one of the finest cities in the northern part of the empire, and if the municipal rents, which are estimated to amount to \$100,000 yearly, are properly expended on works of utility and adornment, it will become one of the first cities of Brazil.

Having fully carried out your instructions, we sailed from Para on September 4 for New York, where arrived on the 25th of the same month.

#### MADEIRA RIVER.

This, the greatest tributary of the Amazon, rises in the Andes, in the vicinity of Cochabamba, latitude  $18^{\circ}$  south, longitude  $66^{\circ}$  west, flowing generally northeast for nearly 2,000 miles, empties into the Amazon in latitude  $3^{\circ}22'30''$  south, and longitude  $58^{\circ}45'$  west. Though generally known to geographers as the Madeira throughout its whole length, it is really divided into different divisions, and known locally under many different names. We have first the Lower Madeira from its mouth to its first falls, those of San Antonio; then the falls of the Madeira, eighteen in number, embracing 220 miles of river; then the Upper Madeira to the junction of the Marmoré and Guaporé rivers, a distance of 96 miles. From this point it is only known as the Marmoré River to its source. Thirty-nine miles below the upper fall, known as the Guaporé Merim, opposite the fall known as the Cachoeira Madeira (on account of the large quantity of wood found here, brought down by the river), the Madeira receives the river Beni. A cross-section of the Beni, taken by Keller, at its mouth gave a width of 1,000 meters and an average depth of 15 meters. As it discharges at its ordinary stage a volume of 4,344 cubic meters per second, something more than the Marmoré and Guaporé at their junction, it might in justice be considered as the main river, and the two last tributaries, and the name Madeira applied to the river only below the mouth of the Beni.

The exact boundaries of Bolivia and Brazil are a matter of dispute.



but, according to the treaty regulations of 1870, the mouth of the Beni was designated as the point where the frontier running due west between the rivers Javary and Madeira touches the shore of the latter; consequently the left shore of the Madeira or Marmoré is Bolivian territory upwards from the mouth of the Beni, while the right belongs to the Brazilian province of Matto-Grosso.

A cursory glance at the map of Bolivia shows that the Madeira and its tributaries drain two-thirds of its arable territories.

Confined to the miserable little port of Cobija, on the Pacific, as its only outlet to the ocean, and separated even from this by a trackless desert and the Sierras of the Andes, it is a matter of wonder that Bolivia has not made greater exertions to improve its natural outlet by the way of the Madeira. It is not in the province of this report to discuss the subject of the Bolivian water-ways, beyond showing their connection with that part of the river Madeira which it has been my duty to survey and investigate. It is sufficient to remark that the Marmoré is navigable to Vichua, 150 miles from Cochabamba, on the river Chaparé, a branch of the Marmoré, which flows through what may be called the garden of Bolivia, as far as nature has blessed it with a most fruitful soil and equable climate. But the whole of this inland navigation is, and will be, confined to a few canoe-loads of cinchona or quinia until the means of passing the falls of the Madeira are obtained, which at present present an impassable barrier to the transportation of any but the more valuable of Bolivian products, from the danger and expense attending their passage.

On the 27th of August, 1868, the concession of a canal or railroad around the falls of the Madeira and the right of navigation of the Marmoré and other tributaries were given to the National Bolivian Navigation Company, organized by George E. Church, esq., of New York City. A 6 per cent. loan of £1,700,000, authorized by act of the Bolivian Congress August 28, 1871, was placed in London in aid of the above enterprise. Notwithstanding the necessity of this enterprise for Bolivia, but little has been done towards its fulfillment, and this little gives but small encouragement for the future. Unreliable contractors, the difficulty of procuring laborers, the necessity of bringing supplies the whole way from Para, 1,500 miles distant, have all conspired to make the attempts of the originators of this work result in entire failure.

Mr. Church, however, with characteristic American energy, is still struggling for the success of his pet project with a perseverance that should be crowned with success, and in my opinion will be if he can extricate the undertaking from the slow litigation of British courts, in which the discontented and disappointed bondholders of the Bolivian loan have thrown it.

The engineers of the present contractors, Messrs. Collins Bros., of Philadelphia, have succeeded in demonstrating the practicability of a line which, after the first 10 miles, presents no difficulties for the next 60 miles; and there is every reason to believe that having reached the elevated plateau through which the Madeira has cut its way by a series of cataracts, they will be able for the remaining 120 miles to find a desirable profile.

As I remarked, at present nothing but the valuable and costly Peruvian bark will bear transportation over the falls, and the natural treasures of the Bolivian plains must remain unsought for until these natural barriers have been overcome.

Let America, then, in every way possible, assist the energetic Church

in his noble enterprise, for she, of all nations, should reap the great benefits from the success of his undertaking.

It is, then, in the navigation of the Lower Madeira from the Falls of San Antonio to its mouth, in view of the probable construction of the Madeira and Marmoré Railroad, that the United States has the most interest, and to this particular portion of the river I have, under your instructions, confined my survey and investigations.

#### CHARACTERISTICS OF THE LOWER MADEIRA.

By the Lower Madeira will be understood that part of the Madeira between its mouth and the Falls of San Antonio.

In the character of its banks and its numerous islands it resembles the Mississippi River. In one feature, however, like the Amazon, it is very different. That is, in the number of small lakes that are found on the banks throughout its course, with outlets on the river itself. These lakes embrace a vast network of internal water communication which enables the rubber-hunters to reach with canoes a large area of country which would otherwise be almost unavailable, as they would be compelled to travel long distances by land to reach the numerous rubber trees which are the great source of wealth of the inhabitants.

They abound in large quantities of fish, turtle, and wild fowl, when the river is high are the homes of numerous alligators. Near all these lakes, where the wild Indians have ceased to frequent them, have the little huts of the "seringueiros" on their borders, which accounts for the much larger population than is apparent to those who only see the inhabitants on the river bank.

The Lower Madeira, through its whole course, may be said to pass through an alluvium. The only out-cropping I noticed in the first miles was very small, apparently trap, at the foot of a low hill on the left bank at the foot of the island Orucurutuba. Above there is more rare intervals, at low water, a ferruginous conglomerate underlying a bed of clay. Of such a character is a portion of the left bank above the Uroa rapids. This conglomerate is one of grit stone, little pieces of dolomite cemented with oxide of iron. Its beds are generally horizontal and from four to five yards thick. This ferruginous conglomerate having more resistance than the underlying argillaceous gritstone, the latter crumbles by the action of the water, allowing the conglomerate to topple over into the bed of the river, forming bowlders which, under the general name of "pedras," are the terror of the Madeira steamboatmen.

The occasional irregular resistance of the banks causes the course of the river to become serpentine. Banks of sand are formed on the convex side, and the concave side is gnawed away by the constant action of the water, causing the river to assume an irregular course; then the mighty force of increasing floods will force itself through the isthmus, straightening itself again and cutting off a portion of its bed, which accounts for the numerous lakes spoken of as peculiar to the adjoining territory of the Amazon and Madeira.

This untiring work of the river floods, cutting away and forming new banks, is expressed by the inhabitants of the Amazon Valley under the terms "igapó," "varjem," and "terra firma."

The igapó is the newest alluvium of the convex margin, whose elevation is not above high water mark, and is therefore annually overflowed. Its vegetation is well marked, producing woods of a soft and generally useless nature, excepting the Seringa (*Siphonia elastica*).



The varjem includes the country whose elevation is between ordinary and extreme high water, not subject to periodical overflows. Here are found the numerous varieties of the palm family, the mulatto wood, peringa, cacao, and others. It is also suitable for the cultivation of the sugar-cane.

The third, the terra firma, are the remains of ancient water-courses through which the rivers have formed their channels, and in the Madeira appear in the form of bluffs, not over 100 feet high, and formed of red and yellow clay. It is only on terra firma are found the hard and close grained varieties of wood valuable in commerce. Therefore, from the Lower Madeira will never be exported any large quantities of valuable woods, though they abound in the vicinity of the falls of the Madeira.

In a word, then, the Lower Madeira flows its entire course through a flat country, with occasional bluffs not over 100 feet high. Its banks are annually overflowed from February to the middle of April. The lowest stage of the river is in October. It commences to fall about May, and averages about 6 feet a month till July 1, when it goes down more rapidly at a rate of not less than 8 feet.

The average rise and fall is about 40 feet, and the extreme difference between high and low water has ranged as high as 48 feet.

#### CLIMATE.

The temperature is always high, but the nights are not uncomfortably hot. The highest reading of the thermometer was on July 23, at 2 p. m., 91°, and from 83° to 88° may be considered the daily temperature from 8 a. m. to 8 p. m.

July and August are the hottest, as well as the dryest. But there are at times a cold wind from the southwest in the summer months, when there is a great and uncomfortable fall. We experienced two such days at anchor 200 miles from the mouth, when the thermometer fell as low as 70°, and did not rise above 77°.

Observations of our wet-bulb show that the moisture decreases very much as the river is ascended.

At San Antonio, while the mercury frequently goes to the nineties, the heat is not as oppressive as in the Lower Amazon, where there is not evaporation enough in the air to cause the wet-bulb to fall below the outside temperature.

The nights at San Antonio are very much cooler than near the mouth, there being a difference of ten degrees. The great difference of temperature between day and night at San Antonio makes rheumatism a frequent complaint.

The experience of the *Enterprise*, and what I have gathered from other sources, lead me to believe that the valleys of the Amazon and Madeira may be considered healthy. Persons navigating these rivers would be no more subject to disease than if engaged in similar occupations on the Western rivers.

The *Enterprise* has been three months on constant service on the Upper Amazon and Madeira, and we have not had more than a half dozen cases of intermittent fever, and these mild.

San Antonio is notoriously unhealthy. No satisfactory reason has ever been given, and it is alleged that the water remaining in the hollows in the rocks after the water falls stagnates, and throws out pestiferous vapors. Probably so, but the real cause, in my opinion, is in the small creeks which run into the river above the town, and a large lake back of it. As the water dries up by evaporation, there being no outlet,

vegetable decomposition takes place rapidly, and no doubt is the reason for the large amount of sickness, for I have never in my life seen a more unhappy and unhealthy body of men than the workmen on the railroad at San Antonio. Hardly a single one had escaped attacks of fever, and the pale and cadaverous looks of nearly all of them was truly pitiable.

The rainy season may be said to commence in November and end in April. The largest rain-fall is in the months of January, February, March, and April. The rain-fall is, however, at no time excessive, and the largest amount in any one month, as gauged at San Antonio, was a total of 15.85 inches in the month of January.

The following gauge of the rainfall at San Antonio, as measured by the English engineer at this place in the year 1873, will illustrate the seasons and may not be uninteresting:

January .....	15.85	July .....	0.3
February .....	10.87	August .....	1.0
March .....	14.89	September .....	5.7
April .....	11.01	October .....	1.9
May .....	5.96	November .....	11.3
June .....	2.56	December .....	10.0

There is a wide difference between what is known as the rainy season in the Valley of the Amazon and the same on the Isthmus of Darien. There is not the soaking, drenching rains for days at a time of the latter, but rain interspersed with much pleasant weather.

Insect life is found here in all its varieties, and the two pests of travelers in tropical South America, mosquitoes and piums, are found in full vigor on the Madeira.

The piums, a small black fly of the size of a gnat, are in great numbers at the Falls of San Antonio, and, enveloping their victims in clouds, inflict very irritating and painful bites upon every part of the body uncovered. They commence at sunrise and continue till sunset, when they give way to the mosquitoes.

To Americans fresh from home the latter are annoying in the extreme and whether anchored in the middle of the stream or at the bank there is no peace from them till their attacks are evaded under the shelter of a bar.

#### INHABITANTS.

It is only within the past twenty-five years that the Madeira has been peopled to any extent by any other than the wild Indians. In 1749, the Portuguese sent a large expedition from Para, by the way of the Madeira, to the mines of Matto-Grosso, on the Guaporé River, a tributary of the Madeira above the falls.

When Lieutenant Gibbon descended it in 1854, in his expedition across the Andes, he found a small settlement at Crato and the town of Borba, with a few scattering huts in the lower part.

What gave a great impetus to its settlement was the unrivalled excellence of its rubber, and the yearly increasing demand for it throughout the world. So that now, from the best information I could gather there are at present, including Portuguese, Brazilians, blacks, and domesticated Indians, about twelve thousand people scattered along its banks. This whole population may be said to be engaged in the production of rubber. It is doubtful whether there will be much increase in this number, unless the price of this gum should go so much higher as to stimulate the lazy Brazilians to increase its production.

The country is now generally taken up from within fifteen miles of the banks with estradas leading to all the rubber tracts, and to increase



The supply the natives must go more into the interior. Here comes in the fear of attacks from the Indians, and what is almost as bad to the indolent Brazilian, the necessity of carrying his rubber a long distance by land.

A quarter of a century ago the Madeira was principally peopled by wild Indians. The chief of these were the Muras, the Mundurucus, the Papunhas, Parintintins, and Capunhas.

It is not probable that any of these tribes were ever very numerous, because, from the natural aversion to the Indians to labor, they would be obliged to subsist principally on game, which is not plentiful. Of the above, all but the Parintintins and the Capunas have become domesticated. At every hut owned by a Brazilian laborer there will be found one or more families of Indians, who, though seemingly independent, are bearers of water and hewers of wood. What remains of these Indians have been collected by the government in the two missions of San Pedro on the Madeira, and San Francisco on the Machado, a tributary of the Madeira.

The term "Tapuyo" is applied to the domesticated Indians of the Lower Amazon, and as a class are industrious and intelligent. They form the crews of all steamers upon the Amazon, in preference to whites or blacks. The girls make excellent servants, skillful with the needle, and are sought after by the Brazilians of the better classes, who bring them up from mere childhood in their families.

In appearance they are far superior to our North American Indians, readily adopting the civilized habits of the whites, cleanly in their persons, faithful in their attachments, and possessing among the females much real beauty, which can hardly be said of any squaw of our home tribes.

The Parintintins are, on the contrary, remarkably savage and ferocious. They have steadily refused all intercourse with the whites or Brazilians, and murder indiscriminately either the latter or domesticated Indians whenever they meet them alone. They are crafty but cowardly, always attacking by stealth. They are said to be cannibals, but whether so or not, they cut off and carry away the head and right hand of their victims. They inhabit the high land about the Machado and Timbuqué rivers about one hundred miles below the falls, and so great is the fear of them that the entire right bank, though rich in rubber, for an hundred miles is without an inhabitant, and no Bolivian dares to pass down alone in his montaria, or camp on the east side of the river within this section.

The following account of this tribe was given to me by a merchant of the Madeira, and interesting as coming from a near neighbor of this dread foe:

The Parintintins live on the banks of the rivers Madeira and Machado (or Matamoras), on the right-hand side going up. These Indians are ferocious and untamable, and their constantly repeated attacks on the neighboring villages and the passing canoes, with their attendant assassinations, make them the terror of the nearest settlements. Their last barbarities were committed during the months of January and February of this year. In January six persons who unguardedly passed through the forests on the right bank of the Machado River were murdered. In February five Bolivian merchants who were fishing up the river from the mouth of the outlet of the small lake called the Tamburguy suffered the same fate.

Generally, after making incisions of a span's depth in the bodies of their victims, they cut off their heads, and sometimes one or two arms, which are carried to the festivals which immediately follow their successful attacks. They always travel naked, one or two of their number using feather ornaments, to induce the belief that they are the chiefs or commanders of their tribes. Their color is nearly white (Mameluen), and report says that their children are very handsome and well formed.

The barbarous acts of these Indians during the years 1871 and 1872 alarmed the Bolivians, who wished to explore the country and export its rich natural products,

and seeing the impossibility of taming the savages, they formed a company of war was considered sufficient force to penetrate the forests. The real object of the expedition was conquest. Five days of foot travel brought the party to an Indian town where there was a feast over the head of a person recently murdered on the river. They killed some, wounded others, and, their ammunition being expended, allowed many to escape.

A few young children of the head men were captured, and allotted to those who were willing to "lend themselves to a work so clearly defined in favor of humanity." Their efforts produced no good results, and the report of their examination to the government unwilling to use force to exterminate "these wild beasts" or to take any measures to suppress their violence, has been of no avail. This indifference of the government and the disastrous occurrences in this district have forced the inhabitants of St. Roque and Buena Ventura to abandon their habitations, rubber-producing estates, machineries, &c., with great prejudice, if not entire ruin, to their interest.

In 1871 the government established a missionary station on the Machado River, which has been put in charge of an Italian priest, Theodoro Maria Portharara, during his life or pleasure. This priest, of astute character, even at the cost of great sacrifice and the risk of his life, has been unable to penetrate near the vicinity of the Parintintins, although in his last attempt he was accompanied by 300 men from the mission of San Francisco.

It would be tiresome to read an account of the barbarities committed by these Indians in this part of the country. From the opposite bank of the river the victims the savages receive no assistance in food, fuel, or supplies. After attacking and burning a town the savages set fire to the houses.

Above the Parintintins, in the interior and at the mouth of the Jamaré, an affluent of the Madeira, there is another savage tribe called the Caugapyraugas, who, although untamable, are not as ferocious as the others. Further on we find the Carypura tribe, more domesticated.

The inhabitants of the Lower Madeira may be divided into two classes: the seringueiros or negociantes, and the laborantes. The former, few in number, are either Portuguese or Brazilians, and through them the whole transaction of collecting the native products of the forests are carried on. They collect about them a great or less number of the poor classes, Brazilians, negroes, mestizos or Indians, according to their wealth and influence. They all keep small stores, at which are supplied all the wants of their dependents, in barter for whatever the poor classes can procure that is valuable. They buy the rubber and copaiba at not more than half its value, and give in exchange rum, "cachaça," farinha, cotton goods, and hardware, at a profit probably of an hundred per cent. The consequence is the poor laborante is always in debt to his master. Many of them make fortunes, but the system of credit and debit is so general in this country that they lose a great deal in bad debts from their men. In no other way could I account for their not becoming wealthy, for their profits are enormous.

#### ANIMALS.—FISH.

Ascending the Amazon or Madeira, the stranger is struck with the absence of game. Not even the all-abundant monkey was seen by Enterprize in its passage of the river. Probably the submerged state of the banks in the rainy season causes the game to seek higher land.

The anta or tapir is met in large numbers in the vicinity of the mouth of the Madeira, as also deer and peccary, and the onça or American leopard. But for the reasons above stated these animals are rare on the Lower Madeira.

Parrots, paroquets, macaws, toucans, and many other varieties of birds are very numerous. But the lack of game is amply made up with a large quantity of fish in the Amazon and all its tributaries.

The one fish greatly prized by the natives is the piracuri, which attains often a size of eight to ten feet in length. On account of its abundance, and the place it fills in the food supply of the inhabitants



It may well be called the codfish of the Amazon. It is not caught with hook and line, but shot with bow and arrow, and on coming to the surface is harpooned and secured. The head cut off and the vertebræ removed, it is laid in large flakes on a platform of bamboo to dry. Large quantities made up in bundles of an arroba, thirty-two pounds each, are sent to Para, and form an important article of diet there and the neighboring seaport villages.

The peixe-boá, or cow-fish, from the resemblance of its snout to the nose of a cow, is highly esteemed. It is the same as the manati of the Rio Atrato, and in fact is not a fish, but a mammal, and should, I think, be classed with the seal family. The Madeira abounds in turtle, of which there are said to be four varieties—the Tortaruga Grande, Cacerda, Trocajo, and Matá-Matá. The Tortaruga Grande is the one most sought after and in the most abundance.

The common practice of catching the turtle is to shoot them with a loose barbed arrow. The barb is secured to the arrow of cane with a small line. When it enters the turtle's shell it is disengaged, and the shaft of the arrow floats attached by the line. They are also caught with a baited hook, but the former is the favorite method. Every Peringuero on the Madeira has his turtle-pond back of the house, where great numbers are kept. They constitute a favorite article of food with all classes of Brazilians, rich and poor.

Owing to the destruction of vast quantities of turtle-eggs on the praias of the Madeira during the breeding season, August and September, for the purpose of making tortaruga manteca, or turtle-oil, their numbers have been greatly diminished. But as on this account the manufacture of turtle-oil on the Madeira is no longer profitable and has been discontinued, it is probable the supply of this very necessary article to the inhabitants of the Madeira will now keep up with the demand. The destruction of turtle-eggs is, however, actively carried on on the Solimões or Upper Amazon, where the tortaruga is still abundant. A species of land-turtle known as the "iabuty" is common on the low ground of the Madeira River, and it is highly prized for food.

#### PRODUCTS.

The products of the Madeira may be said to be such as are entirely extracted from the forest or river.

While the lands bordering on the river are fertile, and would produce large quantities of cacao, mandioca, plantains, maize, and tobacco, one sees in passing nothing beyond a little clearing around the huts of the natives, upon which are growing a few scattering plantains. Higher up, near the falls, where the Bolivians have settled with their Mojos Indians, more attention is given to the cultivation of the soil, and they have large plantations of plantains, mandioca, and maize; but it is the exception, and confined to the more wealthy Bolivians, who make their places their homes.

The Portuguese and Brazilians, only looking on their residences as temporary, seem to have no interest in the improvement of their places, and their one dream is to make a fortune in "borracha," the commercial name for rubber, and retire to Lisbon or Para, though probably few realize it. The great product of the Madeira is rubber; all other pursuits or employments are given up for the extraction of this valuable gum.

From the best authorities attainable I should put the production of rubber from the Madeira at fifty thousand arrobas, or one million six

hundred thousand pounds. This, at thirty-five cents per pound, the current price in Para, would make five hundred and twelve thousand dollars. The value of the other productions from the river is insignificant.

The rubber tree, known here in Portuguese language as *seringa*, or the Atrato, another great source of supply, as caoutchou (*Siphonia elastica*), is not found below Borba.

The *siphonia* grows best where it is exposed to the annual overflow of the river, and therefore is found in its highest state on igapó, the most recent deposit, and vargem or older deposit. It grows also on the terra firme, for it is found about the falls of the Madeira, but I am inclined to think the sap is not of as good a quality as where the tree grows in moister soil.

The season for gathering rubber may be said to commence in June and extends to the following February, when the different "estradas" or paths become impassable from the overflow. These estradas lead from the hut of the seringuero, embracing all the trees in the neighborhood. The sap, which resembles cow's milk, is collected in little tin cups that will hold about two gills. The collector starts at early daylight, and as he reaches the trees he cuts a gash in the bark with his machete, and the cup is stuck in just below, so as to catch the sap as it exudes. For cups are used, which are placed opposite, but on the same circle. They are first arranged at the top, as high as the hand can reach, then shifted down day by day to the ground. They are then again placed at the top in different positions, the idea being in this way to cover the whole surface. The cups being set, the collector begins to gather the sap, visiting the trees and pouring the contents of the cups into a calabash. Where the trees are distant they are visited but once, nearer twice a day. Reaching home, he empties the milk into one of the large turtle shells which are always found at the door of a hut on the Madeira, and proceeds at once with the smoking process, which is generally done in a low hut constructed for the purpose, as the resinous parts will soon separate and produce an inferior article. An earthen jar, without bottom and with a short, narrow neck, is placed over a fire made of the nut ana or unassei palm, whose smoke alone has the power of quickly coagulating the *seringa*. The operator, pouring a little of the milk on the surface of a small wooden shovel or canoe paddle, taking care to distribute it thinly and evenly over the surface, turns it slowly over the smoke until it becomes thoroughly stiff. This goes on until all the sap is exhausted or the calabash becomes unwieldy. A slit is then cut in the plancha, the paddle slipped out, and a stick run through the mass, on which it is suspended to allow the water to evaporate. Enough planchas are collected on one stick to make an arroba, thirty-two pounds; it is then tied up with bark, and this condition is ready for market. The skins at the bottom of the cups and the drops at the foot of the trees are all preserved, smoked, and made up in a round mass, forming an inferior article known as semambo or cabeco de negro. One man will probably collect from five to ten pounds per day.

The *Siphonia elastica* is a noble tree, often 100 feet high, and 24 inches in diameter. Its leaf is elliptical, about the size and somewhat resembling our elm, and of a light-green color. A tree milked as described will not last more than twelve years, and gives very little sap towards the close of this period.

I am told that in fifteen years after planting they can be tapped for their sap. Under the system pursued, as the valleys of the Madeira and Purus are the producing rivers, it would seem as if the supply of the gum has about reached its maximum, for many of the trees have died.



and the country has been well prospected. Before long, however, it will commence to diminish, and then the Brazilians will regret that they have not done what would have been the case in any other country, planted young trees to keep up the annual production.

Destructive as is this method finally, it is not as bad as the one practiced in the valley of the Atrato and Darien, where the tree is at once cut down and destroyed, which has compelled the caoutchoudos of those regions to seek for caoutchouc at constantly increasing distances.

On the Amazon the stranger will hear the terms *seringa* and *borracha* both applied to this staple product. Properly speaking, *seringa* is not only applicable to the tree, but to the sap collected in the cups, while *borracha* applies to the article after its prepared for market. One never hears the traders speaking of the *seringa* he has bought, but the *borracha*, and it is so termed in the market of Para.

Rubber is worth about 25 cents per pound on the Madeira, when at 50 cents, the present selling price, in Para. The difference, less freight and tax, small, of course, on a pound, is what the traders make, increased probably by an hundred per cent. profit on the goods with which the rubber is bought, for rarely is money paid down to the native collector; the result of which, at the close of the season he is always in debt to his *seringuero*, for if a little ahead the latter is sure to excite the desires of the native with some useless but high-priced bauble, for instance a music-box, which will bring the balance on the side of the shrewd Portuguese.

Though rubber is by far the most important article of export of the Madeira, there is a good deal of oil of *copaiba*, *castauha* or Brazil nut, some *guaraná*, and a considerable amount of dried fish, "*peracarú*," pronounced. The oil of *copaiba* is not like the milk of the rubber, the sap of the tree from which it is obtained, but is an unctuous substance contained in a crack in the center of the tree. The latter is therefore bored with an auger to the center, a tap put in, and the juice flows out and is collected in large carboys. From one to five gallons may be obtained, but the flow is immediate, and the tree is not drawn upon oftener than twice a year. This strange oily substance drained from the core is as necessary to the existence of the tree as the sap taken from the rubber, and in a few years they die, giving less each time from the first yield.

The noble *castauheira*, from which the Brazil nuts are collected, grows only on *terra firma*, and to a great height. The nuts, so familiar to us, are contained in a very hard exterior shell of about the size of a coconut, fifteen nuts in a shell. The tree being too lofty to climb without inconvenience, the natives wait for the shells to drop from the tree, which occurs in February and March. This outer covering is so hard that I have seen an axe fly off at the first blow without breaking it. Turned off and polished, very pretty and ornamental cups are made from them. The natives of the Madeira press the kernel of these nuts into paste, which they afterwards dry in large copper pans, also used in the preparation of *farinha*, of which they make a kind of bread, and the oil is used by the women in dressing their hair.

The *guaraná*, made from the seeds of a small plant of the *Paullinia* *orbilis*, is made to some extent on the Madeira, though the largest supply comes from the district of Mauhis, back from Villa Bella. These seeds are crushed into a pulp, rolled up the size of a Bologna sausage, and dried, in which state they almost exactly resemble one.

The dried tongue of the *Picaruci* is used to grate the *guaraná*, of which about a teaspoonful in a tumbler of water, sweetened with sugar, is used. In taste it resembles slightly that of almonds, but a little bit-

ter, and, though palatable, there is nothing seemingly about it which accounts for the avidity with which it is sought for in the interior of Brazil and Bolivia, where it brings \$3 per pound, while selling on the Amazon for 50 cents. It is said to possess medicinal qualities, and to be very soothing to the nervous system.

#### SURVEY.

The *Enterprise* anchored off the mouth of the Madeira at 3 p. m. the afternoon of June 17. The large island of Trinidad extends across the mouth, dividing the Amazon into two channels, while a third, caused by the island Autuz comes out by the mouth of the Madeira and is divided from it by what is known as Madeira Island. The latter flowing parallel with the Madeira would produce the impression that it is one and the same as the Madeira, but the great difference of current marks immediately that it is a part of the Amazon and not its tributary.

Considering the great length of the Madeira, its mouth is insignificant, not more than one mile wide between the point of Madeira Island and the island of Porças, to the east, with a depth of seventy feet.

The lower portion of the Madeira is affected entirely by the level of the Amazon for its depth. As the Amazon does not commence falling before the middle of June, while the Madeira is much earlier, there is in consequence a backing up of the latter, so that at the time we passed up for the first fifty miles the banks were not more than two feet out of water, which was about the same as on the main river.

The ship anchored at 5 p. m. 15 miles from the mouth, at the first clearing on the river, at the foot of the island Orucurutuba. Here are two small bluffs 25 feet high, the first seen; and a small outcropping trap, the only rock met with in the first hundred miles.

Thirty miles from the mouth, at the head of the island of Rosahuiha is found the first shoal place of the river. At this time there was 2 fathoms upon it. When we passed down in the same place but five days later and when the Amazon is at low water there will not remain more than 2 fathoms.

A survey of the Madeira soon becomes as monotonous as one of the Amazon. At first it is a great relief to be away from the vast expanse of the great river, and to be able to take in at a glance both banks without the feeling of littleness that one experiences on the Amazon. But the same everlasting tree line, the deep silence, only broken occasionally by the screech of a parrot, the absence of animal life along the banks, except the lazy crane or the pretty kingfisher, so characteristic of the Amazon and tributaries, soon wearies, and there remains little interest to distinguish one day from another as we pass up the river.

After passing the island of Rosahuiha the current increases to 10 miles per hour, and varies from this to two and a half knots for the first two hundred miles.

There being no rubber gathering below Borba, but a few inhabitants are met with up to this point. We maintained an average speed of seven and a half knots, which gave us about five miles over the ground. The banks of the Madeira, being entirely alluvial, are constantly undergoing a great change.

Numbers of islands are met with, the ends of which are to be avoided, as sand-bars always make out from them.

Forty-six miles from the mouth is met the Furo Canuman, which, running 180 miles to the eastward, empties into the Amazon under the name "Furo Ramos," just below Villa Bella. It is navigable the whole



distance for steamboats, the land is reported fertile, and a considerable population of Brazilian and Mudurucus Indians are settled upon it.

Sixty-four miles from the mouth is the town of Borba, on the right bank, on a bluff 30 feet above the ordinary river stage. It was the first town settled on the river, founded originally by the Jesuits, in the middle of the last century. There is a small production of tobacco, which has an excellent reputation, but the amount is insignificant. Borba presents the signs of decaying existence; the forests in the vicinity do not yield rubber, and probably most of the inhabitants who have had the energy to do so have gone higher up in the rubber region.

Just above the island of José Joao, at a place known as Inatarouta, there is a praia in the middle, which should be avoided, as in the *Enterprise* we found but 3 fathoms upon it. The best channel runs close to the west bank, not more than one hundred feet distant.

Ten miles below Sapucaiaroca there are a number of rocks in the river the whole length of the illos Gauchos. The channel lies over on the west side of the island, which is free from rocks, and as close to it as the lead will permit a vessel to go.

Sapucaiaroca is a settlement of Muras Indians, the only pure Indian town to be met with on the river. The Muras are a treacherous, lazy set, and are but little liked. They may be said to be half civilized, have a tumbled-down church in the village, and no longer molest the inhabitants, though a half century ago they were much dreaded; but a perpetual feud with their more powerful neighbors, the Mundurucus, have reduced them in numbers and spirit.

The Madeira is deeper opposite the town than at any other place on the river.

There are no more obstructions on the river until the island of Araras is reached, where there are many rocks on the river-bed opposite the small settlement of that name. The river narrows here, the current is strong, but we did not find less than six fathoms in the channel, which is near the west bank.

At the foot of the island of Uroá, 200 miles from the mouth, the *Enterprise* anchored on the afternoon of June 21, five days from the mouth of the Madeira.

Five positions were fixed by observation coming up, and on our return four other intermediate points, so that in a distance of two hundred miles eleven positions beside the two termini, or one in every thirty miles, have been accurately determined.

The survey of the Madeira up to the point of anchorage has been conducted in the same manner as in the plan described upon the Amazon. With one survey carefully checked every 30 miles the only errors that can creep in are those of speed. With a regular number of revolutions always maintained, there remains the single error of current. But with a maximum of three knots and a minimum of two knots, as found by our observations, and which could be determined in a great degree by the character of the river whether wide or narrow, we rarely found our line more than a half mile out of position as defined by our observations; and this, applied to the whole day's work, would not make an appreciable error in the position of any particular point.

The Madeira varies from half a mile to a mile in width; and nowhere in the channel was found up to Uroá Island less than 6 fathoms. Later, in the middle of July, such places had 5 fathoms, and probably the river would fall 18 feet more to extreme low water.

The channel to the west of Uroá Island had long been an object of dread to the navigators of the Madeira River, on account of the rapidity of the

current, and the number of bowlders in the passage, which caused g eddies in the stream, and gave an appearance of danger more imagin than real.

Our pilots declined the responsibility of taking the ship through, ignorance on my part of the situation compelled me to be governed by their opinion. The crippled condition of our machinery, working but one engine, liable at any time to catch on the center and not condition to back, added to the difficulties of the situation, and for me, with reluctance, to give up the idea of proceeding farther up in ship.

Measures were at once taken to prepare the steam-launch for further survey of the river to the head of navigation. The water-tanks were taken out and coal-bunkers put in their stead, which enabled to increase the total amount of fuel to 4,000 pounds. Lieutenant Blocklinger was selected to command the party, assisted by Lieut. C. Perkins as astronomer, and Mr. Sparrow as surveyor and draughtsman. The crew consisted of three seamen, a machinist, fireman, and pilot.

Ample provisions for eight men for a month were provided, with the necessary equipments, including two chronometers. The launch was small, having but 28 feet length and 9 feet beam; therefore I added a dinghy to be towed with part of the provisions, and which would enable the party to have a small boat at hand if needed.

It was not expected that the coal would run the launch but a short distance, and funds were provided to purchase wood as fuel. They were compelled to cut the wood in short pieces of six inches, and this proved to be one of the most fatiguing duties attendant upon the expedition. It was found out by accident that the Anaja nuts used for smoking seringa, made a hot fire, and after that, when they could be procured, made an excellent substitute for fuel.

The principal difficulty experienced in using the launch in our survey arose from the great deviation in the compass. It was found not possible to swing the boat properly so as to arrive at any reliable data, even if it were, there was really no place in the already overcrowded little steamer where it could be of use and not interfere with other equally important objects.

Finally we had recourse to deflecting angles, using the dumb compass screwed to the draughtsman's table. Though the latter could give no true course, it would give us the angle between a course already obtained and the bearing from this to some other point from which the launch would be headed. Thus, before starting in the morning, the magnetic compass would be taken on shore, and the bearing of an object taken, which would be the first course. This was laid by the dumb compass, the launch headed for it, and upon ending the line, the number of degrees to the right or left of this line of another object at which for which the launch would be steered, would be laid off.

The plan worked admirably in practice, but it required the most ceaseless watchfulness on the part of the observer, Mr. Sparrow, for a single error would throw out all the remaining work of the day, and he is deserving of great credit for the painstaking fidelity with which he kept up his work. It was necessary, in order to keep our survey correctly, that the positions obtained nightly should be worked up at once, which employed Lieutenant Perkin's time the greater part of the day. Lieutenant Blocklinger had all he could attend to in managing the steering of the launch, the cooking of food, and in providing supplies of fuel. The crew was necessarily reduced to the smallest number possible for efficiency, and the work required of all hands was such as to tax



to his utmost, and during the long period the boat was away the thorough manner with which my orders were carried out elicited my highest approbation.

It was not possible in a boat of so small power to be able to make much headway against the current, so the upward voyage was employed in making a traverse of the banks, keeping close to the shore, and on the return the channel would be run and soundings made.

My directions to Lieutenant Blocklinger were that he was not to make more than 25 miles per day, and observations were to be taken every night, which would enable him to maintain a close check upon the day's survey; also, to follow up the slackwater side, keeping out of the strength of the current as far as possible. It was my intention at first to have taken charge of the party in person, but a desire to make a personal examination of the Uroa Rapids, and a feeling that something might turn up during the long absence that should require my presence on board, made me come to the conclusion to go up later in one of the trading-steamers of the Madeira, and come down from San Antonio in the launch, sounding the channel. Besides, I felt I could acquire much useful information from the pilots, not to be had in any other way, as circumstances had caused me to put but little confidence in our own. The launch left the ship at 7 a. m. on Tuesday, June 25.

During our stay at Uroa working parties were sent on shore to cut wood for steaming purposes. The experiment of burning wood and coal had proved very successful. It was found that sixty pounds of steam could be maintained with a speed of 7 knots, and that 300 sticks of wood represented about a ton of coal. This amount of wood cost us \$55, while coal on the Madeira cost us \$28. This was an important saving, and one that should be remembered if ocean steamers are ever called upon to make the voyage from Para to San Antonio. Had I known it could have saved the government the \$1,000 I paid as freight for a hundred and twenty tons to the mouth of the Madeira in a lighter. Of course, there is a great difference in the wood. If very green, it makes team with difficulty; but partially dry, with a light bed of coal, it answers finely.

The rapids of Uroa, that I propose to make a more special survey of, are distant some six miles from the foot of the island where we were anchored.

To make soundings in a rapid current of 3 miles an hour, with a row-boat, was no easy matter.

I left the Enterprise at daylight, in the gig, accompanied in whaleboat by Lieutenant Nichols and Ensign Hunt. Had some difficulty in finding a suitable place for a base-line, on account of dense undergrowth on the banks. Finally measured one of 440 feet, and fixed by sunset sufficient signal-stations on each bank to cover the river to the head of the so-called rapids, though they are really nothing more than great eddies in the stream caused by large bowlders.

In my absence during the day a naval steam-launch, commanded by a lieutenant of the Brazilian navy, arrived with a letter to me from the president of the province of Amazonas, Baron de Maracajú. The correspondence between the president and myself has already been laid before the department, and to keep up the line of events it is only necessary to state the purport—that is, the Enterprise was in the Madeira River without permission of the Imperial Government of Brazil, while that river was not open to foreign men of war, and he requested that I would immediately retire in my ship to the Amazon. He was correct in saying that I had not the necessary *visé*, but as I understood in leaving the

United States that such had been promised, I replied that I thought he must be mistaken in his assertion; but, however, if he still declined to grant the necessary permit, upon hearing from him, I would depart. I felt assured before I could get answer to my letter our survey would be in such a state of forwardness as to enable me to carry out my promise of retiring from the Madeira without slighting the important work for which the Enterprise has been dispatched from the United States. As I supposed, his excellency replied that he could not grant the required permission, but by that time I was on my return from San Antonio to the Enterprise, which upon reaching, our survey being completed, was dropped down by easy stages to the Amazon.

The base-line measured and stations determined, we proceeded to run lines of soundings over the rapids, the stations at different times being occupied by Lieutenant Nichols, Master Wright, and Ensign Hunt. Simultaneous sextant angles were taken upon the sounding-boat at the dropping of a flag. The survey was very laborious on account of the strength of the current. Thirty-two cross-lines were run, the river averaging about a mile wide, and four up and down lines, at equal distances by myself, Lieutenant Spalding being with me to record the soundings. After pulling a down line the boat had to be pulled up the shore in slack water to the head of the survey, making just double the distance, as the current was too strong to be pulled against. Altogether, about eight hundred soundings were put in. We found rocks with from 3 to 6 fathoms upon them, and close aboard 11 to 13 fathoms. The rocks seemed large boulders, some of them 30 feet high, scattered indiscriminately over the bottom. But a good channel was found 300 yards wide, with 7 fathoms over the whole distance.

Going up, to run this channel a vessel should approach them from the middle of the river, and bringing the western point of Uroa (the one in sight) directly astern, headed for the point on the opposite bank where the grass meets the clay bank, a point of contact distinguishable at a long distance or on a course.

When the upper end of Uroa Island is well opened on the port bow all danger is passed. The channel is also distinctly marked by smooth water between the whirlpools.

Going down, abreast the upper end of Uroa, approach the west bank within 600 yards and head for the point of the island below and ahead. This should bring the stern on a line from this point to the end of the clay bank where it meets the grass. Should the railroad be completed and ocean steamers ascend the Madeira, two buoys placed at the upper and lower ends of channel will make it easy to run.

The repairs to our machinery being completed, the Enterprise dropped down, on the 3d of July, to Araras Island, where I had had a lighter coal from Para left for the ship.

The survey of the Madeira, as far as could be performed by the Enterprise, being completed, I awaited the first steamer to ascend the Madeira and join the steam-launch in the survey of the remaining portion to the falls of San Antonio.

During our stay at Uroa Island, from June 21 to July 3, twelve days the river lowered  $3\frac{1}{2}$  feet, but later, from July 3 to 22, it fell 7 feet, making a fall of about 10 feet in a month.

On the afternoon of July 4 I went on board the side-wheel steamer Canuman, Alberto Moraes, captain, bound for San Antonio. The Canuman was an American-built iron side-wheel steamer, drawing about 6 feet loaded, and constructed after the pattern of our western river boats, with separate engines. This American type, not found in any



steamers of English build, is in great favor among the steamboat owners and pilots of the Amazon and its tributaries, and I doubt if any more steamers for river navigation are ordered in England, unless there is a great difference in price in their favor.

The life on board the river steamers of the country is decidedly cosmopolitan. No state-rooms or berths are provided, for no person in this country travels without his hammock, known as "*réde*," which, upon coming on board, he hangs in such part of the upper deck as best suits him. It is a cleanly arrangement, giving much more room, and better suited to the climate and people, as berths would be intolerably hot and live with vermin. An inclosed room is set apart for women amidship, where they also sling their *rédes* from hooks in the bulkheads.

Coffee is served at 6 o'clock in the morning, and two meals afterwards, breakfast at 11 o'clock and dinner at dark.

The Brazilians are great talkers, and have interminable discussions upon all subjects, in which the parties work themselves up to such a pitch of excitement that a person new to the scenes would think it could not fall short of blows, but a third party will step in, then another, and it goes no farther than a war of words.

The Canuman, being a general freighting boat, was loaded with a great variety of merchandise for a hundred different points. All the *seringueiros* may be said to be storekeepers in a general way; that is, they buy their lands and their rubber in goods. They all have their connections in Para, from whom they buy on credit and remit in produce.

The progress of the Canuman up stream was slow, and it did not reach Manicoré, a town at the mouth of a small river of that name, till the following afternoon, making about sixty-five miles in twenty-four hours.

Manicoré, with its row of white plastered houses, situated on a bluff 10 feet above the river, is one of the few fixed towns on the Madeira, and contains probably 500 inhabitants.

The Manicoré River is ascended about 30 miles by steamers, and supports a considerable population. It is lined with bluffs, and, with no reefs in consequence to ruffle its surface, is very hot and uncomfortable to navigate.

At Marinellas, 58 miles above Manicoré, was the only flower-garden met with. The owner seemed in comfortable circumstances, judging by the quantity of rubber he shipped on our return, and his signora displayed neatness about her house and a variety in her flower-beds rare to find in this country.

Baetas, 30 miles above, though placed on some maps as a town, consists of but a single store. There is a large lake, however, behind, upon which many India-rubber collectors are located, and in this way Baetas is a river port of some consequence. It was here that I obtained my first reliable information about our launch, which placed her some two hundred miles ahead, and going on finely when she passed Baetas.

There is little variation in the navigation of the Madeira. Numerous islands, which cause the channel to shift from side to side, and occasional bluffs of never more than 70 feet high, are the only breaks to the uniformity of the banks, which at this point and season are about 20 feet out of water.

The next point of interest was the mission of San Pedro under the auspices of the government, presided over by an Italian friar of the order of Jesuits. Here are collected some 400 Indians from different parts of the Madeira. While a poor church denoted that spiritual

instruction is not neglected, a room pointed out to me as a school-room indicated that there was some attempt made to instruct the youth.

The mission boasts a town clock, the work of the ingenious friar, construction of which no doubt helped to increase his influence with superstitious flock. These Indians live a free, lazy life, while collecting a sufficiency of borracha and oil of copaiba to give them the means of satisfying their love of finery, and the good friar, while attending to the spiritual needs of his flock, does not hesitate to avail himself of their temporal wants by engaging in a little trade on his own account, buying their produce in exchange for goods. He seemed to be the person most interested in the stock of goods landed by the Canuman, and in the words of the captain, was a "born comerciante."

Above San Pedro the settlers are principally from Bolivia. They come from the vicinity of Trinidad and Santa Cruz, and their haciendas have a comparatively a thrifty look, with large fields of plantains, mandioca, and sugar-cane. These Bolivians have brought and settled near to them numerous Mojos Indians, who are considered as belonging to the family of the proprietor, though they are free and work for hire. There is a mutual understanding that they shall receive so much per day, but the employer has authority to employ them as he pleases.

These Mojos are by far the best type of the laboring class that I have seen on the river. They are strong, industrious, and docile, and they have a look of neatness about them foreign to the Brazilians of the same class, or domesticated Indians of the Madeira. When our steamer was about to touch at one of their places for wood, they would take hold in the most cheerful way, and commence wooding without a word, even though it was midnight.

The Mojos women struck me very forcibly. Naturally tall, the habit of carrying weights on their heads has given them an erect and graceful carriage. They wear their shining black hair brushed close back and plaited in two long braids behind. Their only dress is the camisa, a loose gown with short sleeves, suspended from the shoulders, and adapted for easy movements in a warm climate. Assembled often on the bank in numbers as the steamer stopped to wood or land freight, their modest demeanor, neat appearance, and graceful beauty could produce a pleasant impression on the passing stranger.

Above, 150 miles from San Antonio, we pass on the left bank the small village of Crato, next to Borba the oldest settlement on the river. It has fallen into insignificance in its rivalry with Humayta, an ever increasing little place a mile above on the same side.

The latter town contains about 400 people, and its prosperity is due to the energy and wealth of its principal merchant, Signor Manuel de Moracs, who ships yearly more borracha than any other one person on the river, and also supplies large quantities of fire-wood for the steamers.

Forty-two miles above is the Machado River on the right bank. A branch called the Prieto, 8 miles from the Madeira, is another Indian mission called San Francisco, founded by the government, comparable like the one at San Pedro, of the remnants of different tribes of the Madeira, and is in charge of a friar of the order of the Franciscans. The mission is situated in the country of the dreaded Parintintins, the most savage and warlike of all the tribes of the Madeira. But little, therefore, of the products of the forest are collected beyond some oil of copaiba, as the domesticated Indians are very much in fear of their more warlike brethren. The friar told me he had made three attempts to maintain intercourse with the Parintintins, but without success. He went to



wn, six leagues distant, making the sign of the cross as he approached, but, though they offered him no harm, they all left the village, refusing to hold any intercourse with him.

The Parintintins are found about the rivers Machado and Timbuqué, and such is the dread of them, that for 50 miles on the right bank in the vicinity not a habitation is to be seen.

Twenty-three miles above the mouth of the river is Abelhos. An island of the same name divides the river. In high water the channel leads to the west of the island, but when the river is half down, steamers must pass through the east channel, which is one of the few dangerous points of the Madeira. The channel opposite Abelhos is full of rocks. Steamers must pass up to the east and at the side of the praia that takes out from the island. When nearly abreast the foot a white clay bank on the opposite or east side will bear about three points on the port bow; cross the river here, heading for it, and it will lead between the rocks. There is a considerable settlement at Abelhos, and large quantities of rubber are exported.

We arrived in the Canuman at Abelhos on the morning of the 11th, and to my surprise I learned that our steam-launch was two miles below, as I had fully expected at this time it would have been at San Antonio. I sent four hundred pounds of coal by a boat which the captain kindly loaned me, and he also consented to wait until the launch came up, which, with the aid of the coal, she finally accomplished. Found that for twelve days, up to the 7th of July, the launch had done finely, making twenty-five miles as a day's run with ease. After this date the boiler gave them a great deal of trouble, and they had been five days making fifty-one miles. Lieutenant Blocklinger attributed the difficulty to the collection of sediment over the crown-sheet and tubes from the long use of muddy water; but that with a coal fire he felt assured he could make the remaining sixty miles to San Antonio. I accordingly purchased a ton of coal from the Canuman and gave him directions to sail with all dispatch. She started in the afternoon just after ourselves, and when lost sight of at night was making good progress.

To guard against a possibility of the launch breaking down, I took Lieutenant Perkins with the chronometers on board the Canuman.

From Abelhos to San Antonio, 60 miles, the river is clear of all difficulties except at Samandua island. The praia of Samandua is the largest on the lower Madeira, and until lately was the resort in August and September of numbers of natives to hunt for the eggs of the turtle known as the Toraruga Grande, but the turtle by this indiscriminate destruction on its breeding-ground have decreased so much in numbers that it is no longer profitable to seek for their eggs for the making of mantiega tortaruga, or turtle butter.

Finally San Antonio is reached at the foot of the lower falls of the Madeira and the head of navigation, 574 miles from its mouth. San Antonio would be an insignificant place but for being the starting-point of the Madeira and Marmoré Railroad, designed to connect the upper and lower Madeira Rivers by a railway 180 miles long.

Two abortive attempts have been already made to carry out this enterprise. A third is now being made by Messrs. Collins, of Philadelphia, who have been at work since February. They have had great difficulties to encounter, on account of indifferent labor and the distance from Para, their only base for supplies. They have already completed and ironed three miles, and it is my private opinion that the experience, perseverance, and energy of the Collins Brothers will carry it forward, provided the means are furnished them from the money derived from

the Bolivian loan originally issued for the purpose, and which is locked up in litigation in the English courts at London.

I remained three days in San Antonio, giving us sufficient time for correct establishment, which is latitude  $8^{\circ} 48' 13.6''$  south, longitude  $63^{\circ} 55' 05.5''$  west.

Our steam-launch did not put in an appearance, though it had ample time, and I felt great uneasiness with regard to her.

I left San Antonio Monday morning, July 15, carrying the survey down myself in the Canuman. The same afternoon we met the steamer Lavery coming up, and our missing launch in tow. Cast her off, towed her with us to a short distance above Abelhos where the Canuman anchored for the night. Lieutenant Blocklinger reported shortly after losing sight of us on the evening of the 11th, that the steam suddenly dropped from 60 pounds to 10, forcing them to anchor. That they had worked incessantly to clean out the boiler, but with any result, and had finally returned to Abelhos under oars. There was nothing to do but to take the launch in tow, and continue the survey of the Canuman. This I was enabled to do with complete success, through the courtesy of her captain, who offered me every facility. The steam line had been put in by the launch on her up trip, and as the Canuman going down kept in the deepest part of the channel, we were enabled to mark this out correctly. Soundings were taken every five minutes, we had the benefit of the experience of the two excellent pilots of the steamer in locating any rocks or obstructions which had escaped our attention.

At Abelhos occurred the only mishap of the expedition, in the sizing of the dinghy in the rapids, by which most of our remaining provisions and clothes were lost.

We reached Manicoré on the night of July 19. On the way down had been ascertained that the difficulty with the steam-launch did arise from sediment in the boiler, but from the leaking of the upper tubes in the steam-space. Of course the steam escaped as fast as made, though it could not be readily detected except by filling the boiler and putting on a pressure. These tubes were all, therefore, expanded, and as the Canuman was to go up the Manicoré River, I left the launch the next morning for the Enterprise, now at anchor at Araras Island, which we reached without difficulty the same afternoon.

During my absence the river had fallen 9 feet. As the survey was now virtually completed, we got under weigh on July 22, and proceeded by easy stages to the mouth, which was reached on the 24th. Here a line was measured, and several important points were established in the vicinity of the junction of the Amazon and the Madeira, which finally completed our work.

It is evident that the weight of the survey of the Madeira fell upon one steam-launch, and it was no small undertaking to go, in this launch, several hundred miles against a strong current. Such an undertaking must necessarily be accompanied with much hardship and personal inconvenience.

Fortunately the weather was good throughout, and the health of the officers and crew did not seem to suffer any from the exposure. Lieutenant Blocklinger is deserving of great credit for the perseverance and energy with which he pushed on, and I was not disappointed in finding in him the necessary qualifications for the important position for which I selected him.

Lieutenant Perkins was necessarily entirely occupied with the astronomical determination of the position reached each night, upon the



rectness of which depended the whole value of our survey, and he performed this duty with great credit to himself and to my entire satisfaction.

The bulk of the work during the day fell upon my assistant, Mr. Sparrow, C. E., and this gentleman has been untiring in his efforts to make our work both reliable and complete. The necessity of using deflecting angles from the dumb compass compelled him to give, during the launch's running, an absorbing overlook which would not admit of a moment's respite.

#### NAVIGATION OF THE MADEIRA.

It would be impossible to give general sailing directions that would be of any practical value. The river is constantly changing, and at all times a person unfamiliar with its course would require a pilot. But the channel line is laid down correctly on the charts made by the expedition, and by a close study of these charts one would very soon be enabled to act independent of a pilot. With the information, for instance, that I could now derive from our charts, I would not have hesitated to have taken the *Enterprise* to San Antonio in spite of the declaration of our pilot that she could not go above the Uroa Rapids.

As a general rule, it may be understood that 6 fathoms can be carried from the mouth to San Antonio from January 1 to June 1. After the latter month the river falls with considerable rapidity, but still 4 fathoms may be depended upon till the middle of July. Between this period and the middle of December the Madeira is not safe for any but river steamers of 6 feet draught, which can navigate it at all periods in the dry season.

While it would be useless, as remarked, to attempt to give any general directions, it will be well to enumerate the few points where navigators should be particularly on the lookout for shoal-water.

Our survey of the Madeira is divided among thirteen sheets on the scale of a nautical mile to the inch. The soundings were taken during the middle of July, and should be reduced by 15 feet or  $2\frac{1}{2}$  fathoms for low water in the middle of October. The soundings are in fathoms.

The following are positions to be carefully sounded:

Sheet No. 1.—Upper end of Rosahiuha Island; praia to east bank; channel about in center.

No. 2.—Abreast of island Popeicoca; playa on each side; channel in middle.

No. 3.—Clear.

No. 4.—Abreast upper island dos Gauchos; rocks along west bank; channel as near island as depth by lead will permit. Abreast bluffs of Mataranta; channel close to west bank; praia extends to middle of river.

No. 5.—Abreast village of Araras and upper end of island; rocks in middle and east bank; channel close to island. Upper end of Uroa island; rocks in river; channel in mid-river. (See special chart.)

No. 6.—A line from Punto Espirio Santo to Casa de Oliviera should clear both praias of islands de Conepapa, but the one on lower island extends well out, and should be felt for with lead.

No. 7.—Praia on point between Island Iatuarana and Capaua, makes well over to the opposite shore, which must be followed close. Rocks on east bank abreast head of island Bieju-assú; keep in middle of stream or as near island as the lead will permit. There are rocks off Manuellos, but they are only dangerous at low water.

No. 8.—Head of island Viado; there are rocks at low water on east bank. Keep as close to praia on island side as lead will permit.

No. 9.—Off center of island of Jurara channel is in mid-stream, but

as praias are on both sides, they are liable to change, and one should proceed with caution at low water. At Carapanatuba Point, channel leads straight across to opposite point to avoid rocks above.

Nos. 10, 11.—No remarks required.

No. 12.—Just above Papagaio, dangerous rocks close to shore and two in middle of river. But there is plenty of water between, and the latter may be distinguished by the whirlpools about them. Dangerous rocks off Abelhos Island, channel on east side close to island till the lower point of the upper island is reached, where cross, heading for clay bank on opposite shore and a little above.

No. 13.—Tamandua Island; channel lies on east side, close to island and praia, to avoid rocks in midstream. There is a deeper channel obtained, I am told, by hugging east shore, between rocks and bank, but I had no opportunity to examine it. Bar off San Antonio, just below and close to town. River but half full; should sound before attempting to cross.

It will be interesting, in conclusion, to investigate how far the Madeira River can be made conducive to American interests. The division of the river, by its falls, leaves us only the lower portion to consider, for until this natural obstacle is overcome there will be neither emigration to Bolivia nor increased demands for American produce beyond the consumption of the last fifty years. In regard to the lower Madeira the estimated population is 12,000; this is probably over than under. They are engaged entirely, as Keller expresses it, in extracting the wealth of the forests, and it is not probable this number will be increased, as the best rubber districts are all taken up. As a population their wants are few. Their food consists mainly of turtle, dried pirarucú, and farinha the first two obtained right at their doors, the last brought principally from Pará. For the other demand of this population no better guide can be given than the description of the cargo of the Canuman, which consisted of 3,198 packages, composed of demijohns (large and small) containing cachaca, wines, and vinegar, and cases, rolls, bales, baskets and barrels of salt beef, sugar, matting, medicines, powder, soap, kerosene, ship's bread, lead, rice, fireworks, leather, farinha, dried fish, beans, milk, bitters, cider, sardines, onions, potatoes, stearine, and stearine candles, soda, biscuit, pepper, salt, pork, lard, dried beef, Florida water, perfumery, beer, cummin seed, window-glass, cheese, preserved meats, lime, varnish, wax, tar, cognac, champagne, codfish, hardware, furniture, &c., and fabrics of wool, cotton, and linen.

I find among the merchants of the Amazon and the Madeira a most excellent feeling towards the American products and manufactures. The demand for American staples is constantly increasing, and I am persuaded that in proportion to population there is a larger demand for American goods in the valley of the Amazon than in any other portion of Brazil.

As already remarked, the trade of the lower Madeira is mostly in the hands of old and well established Portuguese firms, and it would not be worth while to attempt to force in a new element. What America wants is a more extended demand for her productions, and this can be realized much more successfully through the agency of native firms than attempting a ruinous rivalry with them.

There are four steamers at present on the Madeira, which can make the round voyage to and from Pará in six weeks, and they are more than ample for the present demands of the trade.

In the event of the completion of the railroad to the Upper Madeira which will open entire new avenues, I believe there will be presented



a most excellent field for American capital, enterprise, and productions. But it must be early on the spot, as the merchants of Pará are enterprising and shrewd, and aim at controlling entirely the whole business of the Amazon Valley.

#### CONCLUSION.

There is little to be added in conclusion to the report. It will have been seen that the Amazon is capable of navigation for the largest class of steamships for a thousand miles from its mouth. That the Madeira River can be ascended by ocean steamers to its falls, or the commencement of the proposed railroad around them, from December to August. That while the immediate vicinity of the Amazon is so low as to be yearly inundated and its soil is not especially adapted for cultivation, the region drained by its tributaries is of a vast amount, with soil of unsurpassed fertility, abounding in wide pampas where roam thousands of cattle, and immense forests of the most valuable woods or furnishing drugs of the highest commercial importance. That though this vast region is watered by great rivers, tributaries to the mighty Amazon, their navigation is totally obstructed by rapids and falls in every case at variable distances from their mouths. That the railroad enterprise around the Madeira, projected and carried on against immense obstacles by American energy and perseverance, would open a rich productive country, in the improvement of which the United States is directly interested, but which latterly British jealousy bids fair to render abortive.

The population of the region bordering upon the Amazon is small. Nature has bountifully supplied them with the necessities of life, and, therefore, their demands for productions of outside nations is not large, but increasing every year.

The manufactures of the United States are held in high esteem; for example, asking once a merchant how our goods compared with those of other countries, he replied, "We like those of the United States the best, because we know they are always good."

It has been shown time and again that the United States is the commercial ally of Brazil. We can furnish everything the country requires, and as cheaply and of better quality than those of Europe. But the entire lack of facilities has turned the channel of trade completely from us. It is estimated that on an average there is at least an arrival of one steamer a day in Brazil from England.

It is vitally necessary, if the United States will take its share of the foreign business of Brazil, to create avenues of trade by which such will flow to our shores.

These are first of all a well-established steam line, with feeders to different ports. Such line must in its infancy be fostered by the government in order to compete with the old established European lines, until the trade directed by them to our country will enable them to take care of themselves.

There should be direct telegraphic communication between the two countries. To the energy of our own countrymen we are indebted for the first successful Atlantic cable, and why cannot one be laid to Brazil?

A bank through which exchanges could be favorably made is also very necessary for the easy flow of commerce.

I would strongly urge upon those American firms that manufacture or sell goods required by Brazil that they should act in concert, and establish sample houses in the important centers of trade. They should be represented by enterprising agents, speaking the language and ac-

quainted with the wants of the country. Such should be encouraged by liberal commissions rather than salaries.

Our products can better be introduced in this manner through native houses than by attempting to establish large concerns in rivalry with them. But especially it must be remembered that steam communication is absolutely necessary first of all, no matter how high and excellent manufactures may be.

I have the honor to be, very respectfully, your obedient servant,

THOS. O. SELFRIDGE,  
*Commander, Commanding*

Hon. R. W. THOMPSON,  
*Secretary of the Navy, Washington, D. C.*

# REPORT OF THE SECRETARY OF THE INTERIOR.

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DEPARTMENT OF THE INTERIOR,  
*Washington, November 15, 1879.*

SIR: I have the honor to submit the following report of the operations of this department during the past year and such suggestions as in my judgment will promote the public interest:

## INDIAN AFFAIRS.

The elaborate report of the Commissioner of Indian Affairs, herewith presented, gives an interesting account in detail of the conduct of the branch of the service in his charge and the condition of the Indian tribes. The difficulties connected with what is called the "Indian problem" have been steadily growing from year to year, as the western country formerly occupied as hunting grounds by Indians exclusively, is required for agricultural settlement and mining industry. In the same measure as white men and Indians more and more jostled one another their contact has been apt to result in collision. We are frequently told that the method followed by our Canadian neighbors in dealing with the Indians is much more successful than ours, and that we should shape our Indian policy after that model. Those who say so seem to forget that the condition of things in the British possessions on this continent has until recently been in an essential point different from that existing in the United States. In the British possessions the Indians occupied an immense territory, full of game, where they have long been permitted to roam at their pleasure, without being interfered with by the progress of settlement. There was comparatively little necessity on the part of the government of providing for the sustenance of the Indians, because they could almost wholly provide for themselves by hunting. Under such circumstances the Indian problem was very simple, and peace was easily maintained. Of late, however, as settlements spread and game becomes less abundant in their Indian country, our Canadian neighbors, if we may believe recent reports, begin to feel that difficulties similar to those we have so long had to contend with, are gradually coming upon them, and that thus they are just approaching the same Indian problem which has been disturbing us for so long a time in various forms. It is to be hoped that they will succeed in solving it

with less trouble than it has brought upon us, but they themselves appear to see reason for apprehension.

Our Indians are scattered over an immense extent of country in tribes and bands of different size, with constantly growing and multiplying settlements of whites between them. The game upon which formerly most of them could depend for subsistence is rapidly disappearing. They occupy a number of reservations, some large and some comparatively small, some consisting in great part of fertile lands, some barren, many of which were secured to them for occupancy by treaties in the past gone by. It may have been, and probably was, a great mistake to make such treaties with them as distinct nations; but those treaties were made and are entitled to respect. Many treaty reservations have turned out to be of far greater value in agricultural and mineral resources than they were originally thought to be, and are now eagerly coveted by the white population surrounding them. It is argued that the Indians will not and will not develop those resources; that the country cannot afford to maintain large and valuable districts in a state of waste; and therefore they should be thrown open to white people who can and will attend to their development. This demand becomes more pressing every year, and although in many cases urged entirely without regard to abstract justice, it is a fact with which we have to deal, and which must be taken into account in shaping an Indian policy.

Whatever troubles and perplexities the presence of the Indians among us may cause, every man who loves justice and who values the honor of the American name will admit that it is our solemn duty to leave them untried to prepare a better fate than extermination, and a better rule than that of brute force for the original occupants of the soil upon which so many millions of our people have grown prosperous and happy. That all the Indians on this northern continent have been savages, and that many of them are savages now is true; but it is also true that many tribes have risen to a promising degree of civilization, and there is no reason to doubt that the rest, if wisely guided, will be found capable of following their example.

It is believed by many that the normal condition of the Indians is turbulence and hostility to the whites; that the principal object of Indian policy must be to keep the Indians quiet; and that they can be kept quiet only by the constant presence and pressure of force. This is an error. Of the seventy-one Indian agencies, there are only eleven which have military posts in their immediate vicinity, and fourteen which have a military force within one to three days' march. Of the 252,000 Indians in the United States, there have been since the pacification of the Sioux at no time more than a few hundred in hostile conflict with the whites. Neither does it appear that such partial disturbances have been provoked by the absence or prevented by the presence of a military force. Of the four disturbances that have occurred within the last two years, three broke out in the immediate presence of such a mili-



force and only one without it. At this moment a band of less than eight hundred Utes, and another of about one hundred and fifty Indian marauders in New Mexico, in all less than one thousand of an Indian population of a quarter of a million, are causing serious trouble. In fact, the number of white desperadoes who were within the last twelve months banded together in New Mexico for murder and rapine was larger than that of the Indians recently on the war-path near the southern part of the Territory. While I am by no means disposed to belittle the deplorable nature of Indian disturbances or the great value of a military force in suppressing them, it is but just to the Indians to point out the important fact that disturbance and hostility is the exception and peaceable conduct the rule; that a very large majority of Indian reservations are in a condition of uninterrupted quiet without the presence of coercing force, and the equally significant experience that the more civilized an Indian tribe becomes, the more certainly can its peaceable and orderly conduct be depended upon. The progress of civilization and the maintenance of peace among the Indians have always gone hand in hand.

It is frequently said that we have no Indian policy. This is a mistake, at least as far as this department is concerned.

If a policy consists in keeping a certain object in view and in employing all proper means at command to attain that object, then this department has one. The ends steadily pursued by it are the following:

1. To set the Indians to work as agriculturists or herders, thus to break up their habits of savage life and to make them self-supporting.
2. To educate their youth of both sexes, so as to introduce to the growing generation civilized ideas, wants, and aspirations.
3. To allot parcels of land to Indians in severalty and to give them individual title to their farms in fee, inalienable for a certain period, thus to foster the pride of individual ownership of property instead of their former dependence upon the tribe, with its territory held in common.
4. When settlement in severalty with individual title is accomplished, to dispose, with their consent, of those lands on their reservations which are not settled and used by them, the proceeds to form a fund for their benefit, which will gradually relieve the government of the expenses at present provided for by annual appropriations.
5. When this is accomplished, to treat the Indians like other inhabitants of the United States, under the laws of the land.

This policy, if adopted and supported by Congress and carried out with wisdom and firmness, will in my opinion gradually bring about a solution of the Indian problem without injustice to the Indians and also without obstructing the development of the country. It will raise them to a level of civilization at least equal to that of the civilized tribes in the Indian Territory and probably to a higher one, considering the stimulus of individual ownership in land. It will not take away from them by force what in justice and equity belongs to them, but induce them to

part with what they cannot cultivate and use themselves, for a fair compensation. It will open to progress and improvement large districts held by Indians, which will then be of no real advantage to them are now to nobody else.

It must be kept in mind that this cannot be done in a day. We frequently told that the tribal relations must be broken up; that reservation system must be abandoned, &c. Whatever is to be the ultimate end and result of the policy stated, it is certain that half-grown up in the course of centuries will not at once yield to a mere word of command. It is equally certain that the introduction of industrial habits, that settlement in severalty, the foundation of permanent homes, conferring of individual title, and thereby the practical individualization of the Indian, must be accomplished first, and in accomplishing these necessary ends the influence of tribal authority has in many, if not in most cases, whenever well taken advantage of, been found of great usefulness in the progress of improvement. An attempt to accomplish these objects at once all over the country, without the intermediate stages of military force, would undoubtedly result in many cases in Indian wars of unprecedented magnitude and bitterness, which would require a much larger army than we at present possess, and prove in the end not only the most inhuman, but in blood and treasure the most expensive of methods. Recent experience has convinced me that all the desired ends can be most successfully reached by watching and improving every favorable opportunity for giving a wise and vigorous impulse and lending a helping hand to the best capacities of the Indians, and that this method will bring about general good results in a shorter time than would be reached by the heroic treatment.

In fact the progress made during the last two years has been greater than might have been anticipated, and it encourages the hope that the ends above indicated may be accomplished in a comparatively small space of time.

One of the peculiar disadvantages under which the conduct of the Indian service labors consists in the circumstance that every mishap, every untoward accident, whether the service be responsible for it or not, at once attract public attention and criticism, the latter sometimes based upon reasoning and by no means based upon a sufficient knowledge of facts, while the good that is done and the success achieved are apt to pass entirely without public notice. Of the results of the policy pursued in this department, I can speak partly from personal observation made on a tour of inspection undertaken a few months ago, and partly from reports furnished by the inspectors and agents in the service.

#### AGRICULTURE AND HERDING.

There has been much theoretical speculation as to what kind of practical work the Indians are best adapted for. By some men, whose views claim authority, it is asserted that the natural transition from the service

of the savage hunter to that of the agriculturist is the pastoral pursuit, and that therefore the Indian must be made a herdsman and stock-raiser before he can be made a farmer. In theory this sounds well; but in practice it turns out that it cannot be generally applied. The possession of one or two cows does not make a man a herdsman. To make the Indians herders would require large quantities of cattle, so as to give a herd to every head of a family; and inasmuch as they do not possess that large quantity of cattle now, it would have to be furnished them by the government. Moreover, the pursuit of herding furnishes a steady occupation from day to day only to a comparatively very small number of persons. A few young men could attend to the herds of a large number of Indians, and the rest would, in the mean time, remain idle. If occupation is to be furnished to them it must be found in another direction, and that can be only agriculture on a larger or smaller scale. So it is clear that whatever virtue there may be in stock-raising, and however well adapted the Indian in the transition state might be to it, the pursuit of agriculture must necessarily accompany it to occupy the majority of them.

Farming is, of course, first begun on a small scale and in an imperfect way; but the number of Indians engaged in agricultural pursuits, the number of those who raise products sufficient for their own support and even a surplus for sale, and the aggregate quantity and value of these products, are probably larger than is generally understood.

For minute details I refer to the elaborate exhibit contained in the report of the Commissioner of Indian Affairs.

As to the general progress of agricultural pursuits among the Indians, I may state that according to the statistics furnished to this department the Indians on reservations have under cultivation 157,056 acres; 4,270 acres have been broken this year by Indians themselves. A larger area would have been added but for the extraordinary drought which in several localities, especially in the Indian Territory, impeded agricultural enterprise.

The products raised by the reservation Indians this year amount to 28,637 bushels of wheat and 643,286 bushels of corn, 189,654 bushels of oats and barley, 390,698 bushels of vegetables, such as potatoes, turnips, beans, &c.; 48,353 tons of hay cut. In addition to this, 4,677 acres were cultivated, and 2,861 broken on the government farms at the various agencies, for the benefit of the Indians, in part by Indian labor. The products raised on these farms amounted to 15,232 bushels of wheat, 16,814 bushels of corn, 17,023 bushels of oats and barley, 11,925 bushels of vegetables, and 4,698 tons of hay cut. This exhibit of products raised by Indian labor does not include the five civilized tribes in the Indian Territory, Cherokees, Chickasaws, Choctaws, Creeks, and Seminoles, who cultivated 237,000 acres, and whose products are stated at 565,400 bushels of wheat, 2,015,000 bushels of corn, 200,500 bushels of oats and barley, 336,700 bushels of vegetables, and 176,500 tons of



hay. At the same time the raising of stock has been encouraged much as possible. There are now owned by reservation Indians 199,7 horses, 2,870 mules, 68,894 head of cattle, 32,537 swine, and 863,5 sheep, the latter principally by the Navajoes. The five civilized tribes in the Indian Territory are reported to have 45,500 horses, 5,500 mules, 272,000 head of cattle, 190,000 swine, and 32,400 sheep. Provision has been made for an additional distribution of 11,300 head of stock each year among the uncivilized tribes, preference being given to those individual Indians who have taken the best care of their stock heretofore. The complaints frequently made in former times that the Indians would slaughter their cows and eat them has ceased almost entirely. On the contrary, it is found that they are beginning to take excellent care of their domestic animals, and to be proud of the increase of their stock. Many have commenced raising swine and poultry, and it is thought expedient to encourage such beginnings in every possible way. The cultivation of garden vegetables among them is also rapidly spreading. Preparations have been made to increase the area of cultivated soil very largely next year. Considerable quantities of agricultural tools and implements have been distributed, and the demand is constantly growing.

For the first time this year the uncivilized tribes in the Indian Territory were induced to take some part in the agricultural and industrial fair at Muskogee. Several of them sent delegations, and although their contributions were at first very limited, it is expected that the repetition of the experiment will stimulate a spirit of rivalry among them. Another agricultural fair was held by the Chippewas on the White Earth reservation in Minnesota, where the contributions of agricultural products, stock, and articles of domestic industry came exclusively from Indians, and where Indians acted as managers and judges. According to the accounts, the exhibition was surprisingly successful. Some of the Sioux chiefs in Southern Dakota on the occasion of my visit a few months ago expressed a desire to have an agricultural fair on their reservation next year, which might seem somewhat premature, as they are just starting their civilized pursuits; but their ambition in this respect is laudable and deserves every encouragement.

The building of houses to supersede the traditional wigwams and to cultivate the love of, and attachment to permanent and comfortable homes is pushed with energy wherever it is possible. Several of the more advanced tribes, not speaking of the civilized tribes of the Indian Territory, are all completely housed or nearly so, and other tribes will be in the same condition in less than a year.

#### INDIAN FREIGHTING AND MECHANICAL PURSUITS.

Agriculture and herding, however, are not the only fields on which Indian labor has been introduced. In my last annual report I mentioned that late in the autumn of 1878 the conveyance of supplies from the Missis-



river to the Sioux agencies recently established in Southern Dakota was trusted to the Indians themselves. The department furnished wagons and harness and the Indians their ponies as draft animals. A shout of derision all along the Upper Missouri greeted the experiment. A disastrous failure was confidently predicted by those interested in the freighting business and many others. But not only did the Sioux succeed in keeping their agencies supplied during an uncommonly hard winter, taking their wagons over desolate plains without roads, a distance of 90 and 103 miles respectively from the river, but they have proved the most efficient, honest, and reliable freighters the Indian service ever had. Not a pound of freight was lost; although the Indian freighters, occasionally delayed by accidents or extraordinary difficulties on their weary way, were sometimes without provisions, not a cracker box nor a pork barrel was broken open. In the course of the year Indian freighting has been introduced at a large majority of the agencies this side of the Rocky Mountains which are at a distance from railroad depots and steamboat landings, and uniformly with the same success. There are now 1,356 wagons run by Indian teamsters in that occupation, and the overland freighting is done better, more faithfully, and far more economically by them than it ever was done for this department by white contractors. But for the difficulties connected with the giving of bonds we should now be in a condition to have the Indians make bids for freighting contracts for other branches of the public service. The introduction of freighting among them has not only been a great success in itself, but has given a powerful impulse to the desire to work and to earn money among all the Indian tribes that have been so employed. It will be introduced at all the agencies where it is practicable.

The employment of Indians in the mills and workshops on the agencies has been tried with equal success. In some of our grist and saw-mills Indians act as engineers. In the blacksmith shops, saddler shops and carpenter shops at the agencies 185 young Indians are instructed as apprentices and their number is being constantly increased. Some of the shops are successfully controlled by Indians as foremen and the employment of Indians as laborers in a variety of other ways has been generally introduced. On Indian reservations where suitable clay is at hand the establishment of brick yards to be worked by Indians is contemplated and will be begun next spring. On the Sioux reservations in Southern Dakota Indians are engaged in putting up telegraph lines. The building of houses for Indians by white contractors has been abandoned, and Indians are now constructing their houses themselves, window sash, shingles, and planks, the latter sawed in the mills on the reserves, being furnished to them. The old Indian prejudice that it is improper for men to do anything else than hunt and fight, and that squaws only should work, is being rapidly and very generally overcome. The progress made in this direction is indeed unequal on different reservations, but progress has been made almost everywhere and at many

agencies it has been very great and surprisingly rapid. Only in rare cases was any unwillingness or resistance shown by the Indians. It is reasonable to expect that if the present system be pursued with patience, attention, and energy, results still more satisfactory and general will be attained.

#### EDUCATION.

The education of Indian youth has been the subject of special solicitude, and I am very glad to record the fact that our efforts in this respect have been encouraged in a multitude of instances by expressions of urgent anxiety, even among the so-called wild tribes, on the part of Indian parents to have their children instructed in the ways and customs of civilized life, and especially in the English language. It is the experience of the department that mere day-schools, however well conducted, do not withdraw the children sufficiently from the influences, habits, and traditions of their home-life, and produce for this reason but a comparatively limited effect. The establishment of boarding-schools on the reservations for elementary and industrial instruction has therefore been found necessary, and as far as the means appropriated for educational purposes permit, this system is being introduced. In these schools children of both sexes are instructed, not only in the rudiments of knowledge and the English language, but also in the various branches of domestic industry. The number of children attending school in uncivilized tribes was 6,229 last year; this year it is 7,198. In the civilized tribes in the Indian Territory it was last year 5,993, and this year. While thus progress is evident, yet my own personal observation has convinced me that many of the schools at the agencies are not as efficient in their working as they should be, and their improvement will be the subject of special care.

In my last annual report I mentioned the experiment made by the department during the preceding year in sending fifty Indian boys and girls selected from different tribes to the Hampton normal and agricultural institute in Virginia, to receive an elementary English education and also practical instruction in farming and other useful work. Under the wise and energetic guidance of Mr. Armstrong, the principal of the Hampton school, this experiment has led to very gratifying results. The progress made by the pupils in the acquisition of knowledge and of the habits and occupations of civilized life was of course unequal, but in all cases satisfactory and in some remarkable. During the summer vacation many of the youths were sent singly to farmers in the Eastern States, and their conduct, so far as I have been informed, in all cases been favorably reported upon. A personal inspection of the Hampton school satisfied me that the number of Indian pupils could be advantageously increased, which increase has been provided for. The success thus gained seemed to justify the extension of the experiment, and the Secretary of War, with a willingness for which I desire to express my grateful acknowledgments, consented at my request



to turn over to the Interior Department the military barracks at Carlisle, Pennsylvania, no longer used by the army, for the establishment of an Indian school on a larger scale. Captain Pratt, who had already rendered valuable services to the cause of Indian education in Florida and Hampton, was sent by this department to the various Indian agencies to select children of both sexes for the Carlisle school, and he, aided by Miss F. A. Mather, of Massachusetts, a lady of great merit, performed this task with energy and judgment. One hundred and fifty-eight Indian boys and girls, Sioux, Bannocks, Kiowas, Comanches, Cheyennes, Arapahoes, Poncas, and Nez Percés, mostly the children of prominent men in their respective tribes, have been taken to Carlisle Barracks, and the school is now in full operation. Arrangements are also made to have a number of Indian boys and girls belonging to tribes on the Pacific slope educated in like manner at Forest Grove, in Oregon. Their number will be increased as soon as sufficient means and accommodations can be found. If this experiment proves successful, of which there seems to be every hopeful prospect, other public buildings not otherwise used should be placed at the disposal of this department for the same purpose. In my opinion the withdrawal of as large as possible a number of Indian youths from the influences of their more or less savage home surroundings, their education and training in useful knowledge and arts in the very atmosphere of civilization, and after a few years so spent their return among their people as teachers and examples can hardly fail to produce a salutary effect upon the whole Indian population. It has frequently been said that young Indians so educated will, after their return, speedily lapse into the barbarous habits of their tribes and leave these acquirements unused. This might have been the case when a young Indian of this description found himself with those acquirements in the midst of his people solitary and alone, without sympathy and co-operation; but it will not be apt to happen if each tribe or band has in it a larger number of young men and women so educated who can lean upon and co-operate with one another and take advantage of that desire for education which now appears to be found among the Indians generally. It seems, therefore, important that the number of pupils at these schools be increased as much as possible.

Several Indian chiefs whose children are at Hampton and Carlisle have expressed a desire to visit those schools next spring and to bring their wives with them for that purpose—a sort of Indian visiting committee. It is thought that such a visit will be calculated to do much good, and it will therefore be encouraged within proper limits.

So far the policy above stated could be carried out with the means granted to this department. But other things equally important could not be done by this department without further essential legislation, which has been repeatedly recommended to the consideration of Congress, but, I regret to say, without success.

## SETTLEMENT IN SEVERALTY.

On some reservations lands have already been allotted to heads of families, and on several others the allotment will soon take place. According to the promise given by the government the lands occupied by the Brulé (Spotted Tail) Sioux at Rosebud, and by the Ogalallas (Red Cloud) at Pine Ridge Agency, have been surveyed and regularly laid out in farm lots. The "Sioux land-book" will now be opened according to the provisions of the treaty of 1868, and in the course of a few months we may expect to see those populous branches of the Sioux family, which but a few years ago were counted among the most restless, hostile, and untamable Indians, but whose progress during the last eighteen months has been surprisingly rapid, settled as farmers upon their lands. The desire for allotment of lands in severalty is now expressed by Indians on a considerable number of reservations with great urgency. On my visit to various tribes I was asked by a great many of them that "papers" be given them as soon as possible to show that the land they cultivate is their own; and in several instances they intimated that they would not feel secure in its possession and could not cultivate it with any certainty being permitted to enjoy the fruit of their labor, until such papers were granted.

To make their settlement permanent, to cultivate among the Indians the pride of individual ownership of property and the love of a fixed home, and thus to encourage a feeling of independence of their tribal relations, it is necessary that by law a title in fee to the land thus allotted should be conferred upon them, and considering the improvident habits in which a large majority of the present generation have grown up, and it being a matter of experience that in many cases in which Indians had been invested with the fee title some of them were induced to part with it without proper equivalent, and a larger portion of the land was robbed of it by fraudulent practices bearing upon their ignorance and credulity by unscrupulous white persons, it is essential that the title in fee be made inalienable for a certain period of time, say twenty-five years, when the growing generation may be expected to be sufficiently instructed to take care of their property. To this end a bill was submitted to Congress for two sessions providing that a fee title to the lands allotted to Indians inalienable for twenty-five years be conferred upon them individually, but I regret to say that this bill has never been acted upon. I would earnestly recommend that this matter be again urged upon the attention of Congress at the impending session.

## GOVERNMENT OF LAW ON THE RESERVATIONS.

If the Indians are to be advanced in civilized habits it is essential that they be accustomed to the government of law, with the restraints it imposes and the protection it affords. To meet this necessity a bill was introduced at the last session of Congress providing, 1. That the President



authorized to prescribe suitable police regulations for the government of the various Indian reservations, and to provide for the enforcement thereof; 2. That the laws of the respective States and Territories in which Indian reservations are located, relative to certain crimes, shall be deemed and taken to be the law and in force within such reservations, and the district courts of the United States within and for the respective districts, and the Territorial courts of the respective Territories, in which such reservations may be located, shall have original jurisdiction over all such offenses committed within such reservations; 3. That in respect to that portion of the Indian Territory not occupied by any of the five civilized tribes, the laws of the State of Arkansas relative to certain crimes shall be deemed and taken to be the law and in force therein, and the United States district court for the western district of Arkansas shall have exclusive original jurisdiction over all such offenses arising in said portion of the Indian Territory; and, 4. That the place of punishment of any and all of such offenses shall be the same as for other like offenses arising within the jurisdiction of said respective courts. This bill was favorably reported upon by the Judiciary Committees of both Houses of Congress, but no action was taken thereon. In view of the importance of this subject, I earnestly recommend that it be urged upon the attention of Congress at the present session.

#### THE INDIAN POLICE.

The organization of a police force consisting entirely of Indians, begun on a large scale two years ago, has been extended to almost all the agencies, and it has proved very salutary and effective in the maintenance of order and the protection of property. The police has throughout shown great fidelity to duty and zeal in executing the directions given by the officers of the government. It is essential that for this force young men be selected of intelligence, good habits, and respectable standing in their respective tribes, and this rule has been invariably observed. Considerable difficulty in making such selections is found in the circumstance that the pay of \$5 per month provided by Congress for these policemen is entirely inadequate, for the reason that the class of men needed by the government for this service would, if not so employed, earn a much greater amount by work done for their own benefit. I earnestly concur, therefore, in the recommendation made by the Commissioner of Indian Affairs, that the pay of the policemen be sufficiently increased to enable them to devote their services to the government without loss to themselves. Only thus can we hope to keep the proper class of men in this branch of the service.

#### SALE OF ARMS AND AMMUNITION TO INDIANS.

Whenever an Indian outbreak occurs the question is asked where the Indians obtain their arms and ammunition. For many years no arms have been furnished to Indians by the government, except to those who were

in the government's service as scouts or policemen. By the present administration of Indian affairs the Indian traders, as well as all other persons on Indian reservations, have been strictly prohibited to sell or ammunition to the Indians, and that prohibition has been rigorously enforced. The only way in which Indians can obtain fire-arms and ammunition is by purchase from persons outside of the reservations whom the Indian service has no control. There is nothing in the present legislation prohibiting this obnoxious trade except a joint resolution passed by Congress in November, 1876, authorizing and requesting the President "to take such measures as in his judgment may be necessary to prevent metallic ammunition being conveyed to hostile Indians in the Northwest and to declare the same contraband of war in such district of country as he may designate during the continuance of hostilities," and a proclamation of the President issued in pursuance thereof prohibiting the sale of fixed ammunition in any district of the Indian country occupied by hostile Indians or over which they roam, and forbidding all such fixed ammunition introduced into such country and lying in any way to be received by such hostile Indians contraband of war "seized by any military officer and confiscated"; this prohibition to continue "during the continuance of hostilities" to all Indian country, or country occupied by Indians or subject to their visits, within the Territories of Montana, Dakota, and Wyoming, and the States of Nebraska and Colorado.

It is evident that this prohibition, in which the sale of arms and ammunition is mentioned at all, is confined to the sale of fixed ammunition only during the continuance of hostilities in certain districts, when such fixed ammunition shall be seized and confiscated by military officers, and leaves the sale of arms and ammunition in any quantity to Indians on the side of the reservations, where the Indian service has no authority except ordinary times, entirely free. If this trade is to be stopped, a more stringent and sweeping statute is absolutely required.

#### THE INDIAN TERRITORY.

Last spring a movement was organized in some of the Western States for the invasion and occupation by unauthorized persons of certain lands in the Indian Territory, which had been ceded by the Cherokee and Creek governments for the purpose of settlement by other Indian tribes. A large number of people, mostly from the States surrounding the Indian Territory, were discovered in the act of entering the Territory for the unlawful object stated. On the 20th of April last the President issued a proclamation warning all persons who were intending then to enter the Indian Territory against attempting to settle on any lands there, and those who had already so offended, that they would be removed, if necessary, by military force. At the same time corresponding instructions were given to the Army, and with the diligent assistance of



military force in the Territory the invasion was speedily checked and the intruders removed.

While this was accomplished with comparative ease, owing to the promptness and vigor of the interference by the government, which repressed the mischief in its incipency, it must be admitted that had the information which caused proper measures to be taken, in any way been delayed, or had any time been lost in acting upon it, the invasion of the Indian Territory, as planned, might in the mean time have assumed such proportions as to make its repression a matter of extreme difficulty. There is no doubt that many people in the Western States and Territories are eagerly watching every possible chance to obtain possession of the fertile lands of the Indian Territory for purposes of settlement as well as speculation, and it will require the utmost watchfulness on the part of the government to prevent lawless attempts to wrest from the Indian tribes the possession of lands guaranteed to them by treaty. This watchfulness will not be wanting, but it is also probable that the performance of this duty will become more difficult every year as the western country is more densely occupied.

When visiting the Indian Territory this autumn I deemed it proper to call the attention of the representative men of the civilized tribes whom I met at Muskogee, to this circumstance. I assured them that this Administration would meet any repetition of the lawless attempt witnessed this year with the same energy and fidelity, and I had no doubt its successors would endeavor to do the same; but that the difficulties of protecting the integrity of the Territory might in the course of time increase beyond control; that it would be wise for them to consider and provide for this emergency; that in my opinion the best thing they could do for themselves would be to divide their lands among their people in severalty in such lots as they might think best; to obtain individual title in fee like white men; and every member of their tribes being thus provided for, to consider how the rest of the lands not occupied and cultivated by themselves could for their benefit be disposed of to other settlers, so that if they did not keep those lands themselves they would at least secure their value in money; that an individual title to lands actually occupied by them would be under all circumstances safer to them than their national title without individual fee; that the individual ownership of land would also be calculated to stimulate their progress and prosperity; that as their friend I advised them to take this matter into serious consideration while under the assured protection of the government they were perfectly free to do so; that if they acted upon such advice the government would find itself far better able to secure to them the value of their lands than it would be to maintain the present state of things, if at some future day the flood of immigration should sweep over the borders of the surrounding States into the Indian Territory, finding them unprepared.

The idea of dividing their lands among them in severalty is probably not yet popular with a majority of the members of the civilized tribes

in the Territory, but it is to be hoped that this important question brought to their attention will be taken up by them for discussion and serious consideration.

#### THE WHITE RIVER UTES.

The history of the outbreak on the White River Ute Reservation in Western Colorado is given at length in the report of the Commissioner of Indian Affairs. The Utes are one of the very few tribes of Indians who still find on and around their reservations game enough to enable them to live on hunting or to make hunting a profitable business. This is one of the reasons why they are less inclined to engage in occupations which require real work. On the borders of the Ute Reservation there are trading establishments carried on by white men who have made it their business to advise the Utes against going to work and encouraged them to devote themselves exclusively to the pursuit of hunting as of old. That these traders might have the benefit of profitable traffic in furs with them for which they paid the Indians in various goods, arms, blankets, ridges, and whisky. These traders being outside of the reservation the officers of the Indian service had no control over them, and as they attracted the Indians to their establishments by all sorts of allurements they made it extremely difficult to the agents to keep the Indians in proper discipline. The Indians therefore strayed off on all possible occasions and deeming it prudent to spare the game on the reservation they extended their hunting excursions over the adjacent country, especially North and Middle Park, to the annoyance of the settlers. They have in some instances, set fire to the grass and timber for the purpose of increasing the game, and hence the devastation of several timber districts in Western Colorado may be ascribed to them. I have, however, many reports before me which show that a majority of the forest fires in Colorado are not attributable to the Indians but to white hunters, explorers and tourists who are almost uniformly in the habit of carelessly leaving their camp-fires burning when they go from one place to another.

The hunting expeditions of the Indians in North and Middle Park have led to frequent complaints on the part of settlers, and for more than twenty years a correspondence has been going on between this department and the military authorities about the practicability of locating a military post in the neighborhood of the White River Reservation for the purpose of preventing the excursions of the Indians beyond their borders. This correspondence led to no result, General Pope insisting that it would be better to remove all the bands of the Ute tribe to a consolidated reservation farther to the south, while General Sheridan expressed his opinion that an attempt to remove the Utes from their old hunting grounds, especially without their consent, would inevitably result in an Indian war. Both agreed, however, that they had not troops enough at their disposal to establish a new post near the White River Reservation. The complaints of the settlers, of the governor of Colorado, as well



of Agent Meeker, who had applied for military aid in keeping the Indians on the reservation, growing louder, the matter was referred in July last to Major Thornburgh, commanding at Fort Steele, for report. Major Thornburgh reported that the complaints about outrages committed by the Indians outside of the reservation were untrue; that the Utes had been merely on a hunting expedition but had harmed nobody, and "that he had never received any orders from his superiors to cause the Indians to remain on their reservation at the request of the agent, but was ready to attempt anything required of him."

Then occurred the difficulty between Agent Meeker and some of his Indians in consequence of the plowing of a certain piece of land, the assault upon the agent, Mr. Meeker's request for troops to restore order and to arrest the offenders, the advance of Major Thornburgh's command upon the reservation, the fight in which Major Thornburgh and some of his men were killed, the massacre of Agent Meeker and the agency employés, the valiant defense of the surrounded troops under Captain Payne, the heroic feat of Captain Dodge and his company of colored cavalry, the splendid march of General Merritt for their relief, the advance to the agency and the sudden retreat of the Indians, as set forth in detail in the report of the Commissioner of Indian Affairs.

As soon as the attack upon Major Thornburgh had become known to him, Ouray, the head chief of the Ute tribe, had sent his orders to the White River Utes to cease fighting, and to retreat before the military forces. The department received information of this fact on November 13, and on the same day I instructed Charles Adams, esq., of Colorado, an officer in the Post-Office Department, who at my request was, by the kindness of the Postmaster-General, detailed for temporary service in this department, a gentleman known by me to be well acquainted with the Ute chiefs and to possess their confidence, to proceed as a special agent to the Los Pinos Agency and to put himself in communication with Ouray, and eventually with the White River band of Utes. The end he was desired to accomplish was twofold: first, to effect the liberation of the wives and children of Agent Meeker and his employés whom the White River Utes had carried with them as captives; and, secondly, if possible, to prevail upon the White River Utes to surrender those of their number who were involved in the attack upon Major Thornburgh and the massacre of Agent Meeker and his employés. Mr. Adams acted in the performance of this task with an intrepidity and judgment worthy of the highest praise. He found in Chief Ouray a loyal and energetic friend, and then went personally to the camp of the White River hostiles on Grand River, where the captive women and children were given up to him. He then proceeded to General Merritt's camp on White River to communicate to him what had happened and what he still hoped to accomplish. From there he returned by way of the hostile camp to Los Pinos for further conference with Ouray. As soon as the report of the liberation of the captive women and children was received by this

department, Mr. Adams was instructed, October 27, to propose the following terms: that a commission, consisting of Brevet Major-General Hatch, Mr. Charles Adams, and Chief Ouray, be instituted to meet the Los Pinos Agency to take testimony in order to ascertain the guilty parties among the White River Utes, those guilty parties so ascertained to be surrendered and dealt with as white men would be under like circumstances. These instructions had been, after consultation, approved by the President and General Sherman. On the day following a patch was received from Mr. Adams suggesting, upon conference with Chief Ouray, the appointment of a commission in the same manner and to the same end. The commission was appointed, and entered upon its labors on November 14. It is hoped that it will accomplish its purpose.

While Mr. Adams was on his way to effect the liberation of the captive women and children, military operations were suspended, but a considerable body of troops was concentrated in Southern Colorado, where General Merritt was held in the north near White River, so as to be ready for action in case of the failure of the negotiations.

The outbreak on the White River Reservation created in the State of Colorado intense excitement. The wildest rumors were set afloat, that the border settlements and mining camps were being attacked by the Indians; that the Uncompahgre Utes had in a body taken part in the attack on Major Thornburgh's command, that the Uintah Utes, the Arapahoes, the Shoshones had re-enforced them, that a general Indian war was impending, and so on. All these rumors have proved entirely unfounded. It was also urgently demanded that military operations should go on with the captive women and children were still in the hands of the hostiles, and Mr. Adams was among the Indians to save them, and while it was absolutely certain that a continuation of military operations under such circumstances would have resulted in the sacrifice of those captives and Mr. Adams in addition. Such unreasoning appeals could of course not be heeded by those who had the responsibility of the conduct of affairs, and the result has amply justified their action. If the commission succeeds in its work, it will have saved the country an Indian war which would indeed have been destructive to the Indians engaged in it, but also calculated to drive into hostilities Indians originally inclined to remain peaceable, to expose our troops to a harassing and most difficult campaign on ground most favorable to the hostile Indians, and to bring the western part of Colorado with its border settlements and mining camps to incalculable devastation by a savage foe. It was considered the duty of the government to leave no proper means untried to avert such a calamity. War ought always to be, not the first, but the last resort. Even if the commission should fail in its work, the temporary suspension of hostilities will at least have resulted in saving the lives of the captive women and children, and probably in limiting the hostilities to that band of Indians which began the disturbance.

As to the cause of the trouble, it remains only to be said that it



not be found in any just complaint on the part of the Utes. While two years ago they were for a short time insufficiently supplied in consequence of the delinquency of a transportation contractor, who subsequently has been prosecuted by this department and tried and convicted for grave offenses, the White River Utes have since then been amply supplied with all they needed. Their hunting parties are known to have left the carcasses of the game killed in large quantities on the ground, taking merely the skins for trading. Such things are not done by hungry people. Agent Meeker was known as a man of unimpeachable integrity. When he endeavored to plow land for agricultural purposes, which furnished the immediate occasion for the first assault on him, he did it for the benefit of the Indians, and not for himself. The same thing has been done at a large number of agencies without the least opposition from the Indians, and with great success. The real cause of the trouble is, in my opinion, to be found in the fondness of the mountain Indians for their old wild habits, stimulated by the abundance of game in that part of the country, their disinclination to submit to any civilizing restraint, the apprehensions produced among them by the rapid advance of settlements and mining camps encroaching upon their hunting-grounds, the evil influence exercised upon them by whites living upon the borders of the reservation, and the advantage taken of a temporary excitement by the mischievous characters among them upon the approach of a military force.

It is expected that the occurrence of this trouble and the transactions following thereupon will result in such arrangements as will be calculated to prevent, for the future, hostile contact between the white inhabitants and the Indians in that part of the country. Every proper effort will be made by this department to that end.

#### SOUTHERN UTES.

I beg leave to invite attention to the statement made by the Commissioner of Indian Affairs concerning an agreement made in 1878 by a commission appointed in pursuance of law with three bands of Utes living on the southern strip of the Ute reservation. By that agreement a large tract of land was ceded by the Indians to be sold, and the proceeds thereof, after deducting the expenses of survey and sale, to be invested for the benefit of the Indians; the Indians then to have a new agency on the headwaters of the Piedra, San Juan, Blanco, Navajo, and Chama Rivers. The agreement was submitted to Congress and no action taken thereon. Part of this agreement provided in particular for the sale of an exceptionally valuable tract of four miles square for the sum of \$10,000. Congress at its last session was asked to make appropriation therefor, but failed to do so. Inasmuch as this tract has in the mean time, in great part, been occupied by white settlers, without the government performing its part of the bargain by the payment of the stipulated sum of money, the failure of the appropriation constitutes a

just grievance of the Indians, which in justice should be speedily dressed. I therefore earnestly recommend that the necessary appropriation be made.

#### VICTORIA AND THE SOUTHERN APACHES.

The Commissioner of Indian Affairs gives in his report an elaborate account of the wanderings, removal, settlements, escapes, and marauding expeditions during several years of certain bands of Southern Apache. Victoria, one of their chiefs, came, on the 30th of June last, with a small number of men, to the Mescalero Agency, in New Mexico, and after conference with the agent promised to stay there quietly, whereupon arrangements were made to bring to them their wives and children from whom they had been long separated, then living on the San Carlos Reservation in Arizona; but the consequences of their former reckless life and misdeeds suddenly turning up, upset all these arrangements and good intentions. In July last, three indictments had been found against them in Grant County, New Mexico, for horse stealing and murder; and believing themselves pursued by the officers of the law, they effected their escape from a military guard watching them, and took with them other Southern Apaches from that reservation. Then their old marauding life began again, and they committed a number of murders and robberies in Southern New Mexico. The vigorous pursuit by a military force under Major Morrow succeeded, after rapid and difficult movements, to drive them across the Mexican border, and they are now on foreign soil. These small bands, living in a country now and then infested by gangs of white desperadoes, who make marauding a profession, are vagabonds by lifelong habit, and in view of the atrocities committed by them, should be dealt with in the severest manner should they ever appear on our territory again.

#### CHIEF MOSES AND HIS PEOPLE.

The troubles and tribulations to which Chief Moses and the bands of Indians that recognize him as their chief have been exposed for some time past, are fully set forth in the report of the Commissioner of Indian Affairs. I invite attention to his narrative as furnishing a fair illustration of the difficulties the Indian service has to contend with in its efforts to prevent collision between Indians and white settlers when the latter are determined, upon any pretext and by any means, to drive the Indians from the lands they occupy. The Commissioner states in detail how Moses, at that time not living on any reservation nor under the control of any agent, was charged with complicity in a murder; how he was seized, laid, arrested, thrown into jail and threatened with death, and how at a critical moment this department interposed, ordering him to come to Washington, to have his case inquired into. After several conferences with him, in the course of which he produced the impression that



he was an innocent man, an impression confirmed by information received from Washington Territory, especially from military officers, it was agreed that he and his people should occupy a tract of land adjoining the Colville Reservation in Washington Territory, set apart for them by executive order. The delegation then returned to Washington Territory, and it required special precautions on the part of the department commander, General Howard, and the governor of the Territory, to have them safely conveyed to their new place of abode.

The murder case in which Moses had been charged with complicity has since been tried, and, while three Indians were convicted of the crime, Moses was found entirely guiltless.

There never was any trustworthy information in the possession of this department to justify any suspicion as to the conduct or intentions of this Indian chief. On the contrary, he is known to have rendered good service during the Bannock trouble in maintaining peace and good order among the Indians under his influence. But the efforts to take his life or at least his liberty, or to drive him into hostilities, appeared to be so persistent that it required the most watchful and active interposition on the part of the government to prevent a conflict. On several occasions I requested the governor of the Territory to give his personal attention to this matter, and to him, as well as to General Howard, I have to express my acknowledgments for prompt and effective co-operation with this department in the measures taken to effect a peaceable solution of the difficulty.

At present Moses and his people are on their reservation, but this department is informed that new attempts are made to draw them into trouble, which attempts, it is hoped, will result in failure.

#### THE PONCAS.

That the Poncas were grievously wronged by their removal from their location on the Missouri River to the Indian Territory, their old reservation having, by a mistake in making the Sioux treaty, been transferred to the Sioux, has been at length and repeatedly set forth in my reports as well as those of the Commissioner of Indian Affairs. All that could be subsequently done by this department in the absence of new legislation to repair that wrong and to indemnify them for their losses, has been done with more than ordinary solicitude. They were permitted to select a new location for themselves in the Indian Territory, the Quapaw Reserve to which they had first been taken, being objectionable to them. They chose a tract of country on the Arkansas River and the Salt Fork northwest of the Pawnee Reserve. I visited their new reservation personally to satisfy myself of their condition. The lands they now occupy are among the very best in the Indian Territory in point of fertility, well watered and well timbered and admirably adapted for agriculture as well as stock-raising. In this respect their new reservation is unquestionably superior to that which they left behind them on the Missouri

River. Seventy houses have been built by and for them of far better quality than the miserable huts they formerly occupied in Dakota, and the construction of a larger number is now in progress, so that, as agent reports, every Ponca family will be comfortably housed before January. A very liberal allowance of agricultural implements and stock has been given them, and if they apply themselves to agricultural work there is no doubt that their condition will soon be far more prosperous than it has ever been before. During the first year after their removal to the Indian Territory they lost a comparatively large number of their people by death in consequence of the change of climate, which is greatly to be deplored; but their sanitary condition is now very much improved. The death rate among them during the present year has been very low, and the number of cases of sickness is constantly decreasing. I have thought that they are now sufficiently acclimated to be out of danger.

About the 1st of May last "Standing Bear," a chief of a band, with some twenty Indians, left the reservation in the Indian Territory to return to the Missouri River. As has always been done in similar cases, they were arrested at the request of this department to be taken back to their reservation. Application was made by citizens of Nebraska to the United States court at Omaha for a writ of *habeas corpus*, which was granted by the court, and Standing Bear and his followers were released at liberty. Efforts have been made in various places to raise a subscription for the purpose of testing in some way the question whether Indians can, by governmental action, be removed from lands once confirmed to them by treaty, and whether they can be arrested and returned to a reservation on which they have not by treaty bound themselves to remain. It would, perhaps, be well to have the rights of Indians defined and fixed by judicial decisions; but I do not think that, as seems to be believed by many people, such decisions will "solve the Indian question." The solution of the Indian question depends upon the civilization of the Indians and their ability to take care of themselves, to which "the definition of the Indians' rights" will probably contribute but very little. If judicial proceedings should result in spreading among the Indians the impression that they can leave their places of abode and roam about at pleasure, the effect would only be disastrous to them. If, for instance, the scheme which has been publicly advertised, to induce the Poncas to send emissaries sent among them, to leave their present reservation, with their houses and other improvements, where they are rapidly becoming acclimated, and to return to Dakota, where all this work would have to be done anew, should be carried out, it would probably injure only the Poncas themselves. This department has done all that was in its power to indemnify the Poncas for the wrong done them. No tribe of Indians has been more liberally cared for and provided with everything that could make them comfortable and prosperous. If all this should now be done, and they be obliged to start afresh, it would be a matter for great consideration whether the injury to them would not be much greater.

than a mere vindication of a right to a piece of land on the Missouri River could possibly remedy. Whatever might or should have been done, while their removal to the Indian Territory was still an open question, their present condition should not be left out of view in determining what is to be done now.

I have been informed on good authority that emissaries have also been sent among the Sioux in Southern Dakota, who are now contented, and have made a very hopeful beginning in doing useful work for themselves, for the purpose of "teaching them their rights," and inducing some of them to withdraw themselves from the authority of the government, and to leave their reservation so that another "test case" may be made up. Such schemes are mischievous and reprehensible, and should be discountenanced and resisted by all well-meaning citizens. If they are set on foot in the name of philanthropy, it is a philanthropy most hurtful to those it pretends to benefit. True philanthropy will use every effort to accomplish that which is really best for the Indians, to make those who are well settled stay quietly where they are, avail themselves of the means offered for their improvement, cultivate their fields and take good care of their stock, devote themselves to useful work, send their children to school, and submit to the discipline which is necessary for their advancement in civilized life. This will be better for the Indians than an agitation calculated to divert their minds from that which is really needful.

#### GENERAL CONCLUSIONS.

On the whole, it may be said, notwithstanding the isolated disturbances which have occurred in Colorado and New Mexico, that the general temper and disposition of the Indians as to their willingness to work and to abandon the ways of savage life has greatly changed for the better. I do not mean to say we shall have no further trouble, but there is abundant evidence that at present the government possesses the confidence of the Indians in a greater measure than for a long time past, and that directions issued by the government are far more generally received by them with respect and obedience. We must not expect of them more than in the nature of things they are capable of doing. They must be treated not only with justice but also with patience. It may be necessary to repeat to some of them the same lesson again and again before they comprehend it, which requires persevering as well as intelligent work. But the progress made by some of the wildest tribes within my own official experience is most encouraging. When I entered upon my present duties I was told by men of long experience in Indian affairs that we would never be able to do anything with the Spotted Tail and Red Cloud Sioux "until they had received another thorough whipping." Since that time they have twice been obliged to change their location. A general outbreak was predicted a year ago. When I visited them this autumn I found their freighting wagons by hundreds on the road with their young warriors on the box, their chiefs with their people making



hay and cultivating fields on the bottom lands, many of them build houses for their families; anxious to have their children educated; many requesting that their boys and girls be taken to our schools in the East and the universal wish to be permanently settled and led on "in the white man's way." Only one slight disorder interrupted their general good conduct. Similar things may be said of many other tribes. The rapid disappearance of game, which is to them a blessing in disguise, will greatly facilitate the introduction of civilized pursuits among several tribes who at present still prefer hunting to regular work. There is good reason to hope that if Congress will aid the carrying out of the policy above indicated, the enactment of legislation essential to its success, and if the citizens of the West will make up their minds to it that the Indians must have at least some land worth cultivating, we shall in another year make another long step toward that solution of the Indian problem which consists in so settling the Indians that they may become self-supporting, and that their presence among us will cease to be a disturbing element in American society.

In justice to the Indian service as at present constituted, I feel it my duty to say, that while it has been found necessary for the reformation of abuses to visit severe punishment not only on grave violations of duty, but even upon minor irregularities, and thus to make many reforms and changes, such delinquencies have grown steadily less in number as well as gravity, and are now of very rare occurrence. Complaints formerly so frequently heard, whether justly or unjustly, that supplies and annuity goods appropriated for by Congress and purchased for Indians by the Indian Office, were not delivered to them, or that such goods and supplies were of bad quality, have almost entirely ceased.

It is a pleasant duty to acknowledge the valuable services rendered by the Board of Indian Commissioners in supervising the making of contracts and purchases, as well as the harmonious and effective co-operation of the War Department and the military authorities on all occasions when their assistance was requested.

### PUBLIC LANDS.

The report of the Commissioner of the General Land Office gives an abstract of the operations of his office under the laws relating to the survey and disposal of public lands during the year ending 30th June, 1879.

During the year ending 30th June, 1879, public lands were disposed of as follows:

For cash.....	Acres 622,577
A decrease of 254,981.18 acres, as compared with the previous fiscal year.	
Of this quantity 165,906.53 acres were entered under the desert-land act.	
Under homestead laws.....	5,260,111
An increase of 841,766.37 acres, as compared with the previous fiscal year.	
Under timber-culture laws.....	2,768,577



	Acres.
An increase of 896,132.75 acres, as compared with the previous fiscal year.	
Agricultural-college scrip locations.....	960.00
Bounty-land warrant locations.....	50,820.00
A decrease of 33,900 acres as compared with the previous fiscal year.	
State selections:	
School indemnity.....	85,474.65
Internal improvements.....	81,400.46
Agricultural colleges.....	680.00
Salt springs.....	18,836.02
	186,391.73
A decrease of 28,600.80 acres as compared with the previous fiscal year.	
Scrip locations:	
Sioux half-breed scrip.....	1,879.05
Chippewa half-breed scrip.....	640.00
Valentine scrip.....	1,417.70
Porterfield scrip.....	240.00
Cole scrip.....	480.00
	4,656.75
Scrip located under acts of June 2, 1858, and June 22, 1860.....	87,573.44
An increase of 4,429.84 acres as compared with the previous fiscal year.	
Under the swamp act.....	75,388.08
A decrease of 127,537.77 acres.	
Certified for railroad purposes.....	278,334.11
A decrease of 328,006.54 acres.	
Total.....	9,333,383.29
A quantity greater by 647,204.41 acres than that disposed of the previous fiscal year. This increase is largely due to the greater quantity taken under the homestead and timber-culture acts.	

The cash receipts were \$1,883,113.56, a sum less by \$139,418.60 than that received the previous fiscal year.

During the fiscal year 8,445,781.64 acres of public lands were surveyed, and 1,039,214.26 acres of private land claims, a quantity of public lands greater by 414,760 acres than that surveyed the previous year. The entire quantity surveyed is 734,591,236 acres, leaving of the public domain yet to be surveyed 1,080,197,686 acres.

The report of the Commissioner recites the appropriation for the survey of public lands and private land claims, and the distribution of the appropriation among the sixteen surveying districts. It also contains the report by the surveyors-general of surveying operations in their respective districts, and the statement that the boundary line between Colorado and Utah Territory has been surveyed and marked.

The applications for certified copies of patents, papers, &c., have greatly increased. As the compensation received for such copies under the law must be turned into the Treasury, the Commissioner suggests an amendment, so that the moneys received for such copies may be made applicable for the payment of copyists employed upon the work.

He suggests that abandoned military reservations that are found to

have no value greater than other lands should be disposed of under general land laws. The lots contained in the Detroit Arsenal ground Michigan, can by law be sold only at public offering. So few of them have been sold as to render certain the fact that they were appraised at too high figures. He suggests that Congress provide for a reappraisal and the disposal at private sale at the appraised value of such lots as remain unsold after public offering. He renews his recommendation that Congress should take action as to railroad grants that have long since lapsed by non-completion of the roads, and either force a forfeiture of the lands granted or extend the time for the completion of the roads. As they now stand, large bodies of land are withheld from sale or entry, and there is no mode by which actual settlers can obtain title to them.

The consolidation of the pre-emption and homestead laws is again recommended by the Commissioner as demanded by the public interests.

He expresses the opinion that in view of recent decisions of the Supreme Court of the United States in the cases of *Atherton vs. Fowler* and *Hosmer vs. Wallace*, there should be additional legislation in order to protect settlers in good faith on the public lands.

These recommendations have the approval of the department.

#### DEPREDACTIONS ON THE PUBLIC TIMBER LANDS.

I deem it my duty again to invite the attention of Congress to the depredations committed on the timber lands of the United States and the necessity of the enactment of laws calculated to arrest the indiscriminate destruction of our forests, especially in the mountainous regions of the country. Since my last annual report the only action taken by Congress toward the suppression of timber depredations consisted in the appropriation of \$40,000, provided for by the act of March 3, 1891. Under this appropriation a maximum force of fifteen special timber agents was employed to investigate trespasses in the various public land States and Territories. These agents were from time to time transferred from one field to another as it was thought that they could best serve the public interests.

The labors of these agents have been fruitful of good results in two directions: first, in collecting testimony for the prosecution of trespassers and for the recovery of the value of timber unlawfully taken from public lands. It was predicted by many opponents of the policy pursued in this respect by the department that the cost of the investigations and prosecutions would not be covered by the proceeds, and that therefore the money appropriated and spent for this purpose would in great part be money thrown away. This prediction has not been justified by results. The sum covered into the Treasury during the last fiscal year in account of timber depredations was largely in excess of the sum appropriated, and a considerable number of cases is still pending in the courts.



ing trial, which will, when judgment is obtained, very much increase the amount already recovered. The details are presented in the report of the Commissioner of the General Land Office. The prosecution of depredators on the public timber lands has, therefore, been a well-kept business to the government.

It is, however, the least important result of the operations of the department in this respect. Of far greater consequence is the fact that the investigation of trespasses and the prosecution of depredators, carried out with vigor and earnestness, although with very limited means, have resulted in some of the localities where the depredations had been most extensive, a wholesome respect for the law, and strengthened the desire of the citizens, who have the interests of the country at heart, to see the unlawful destruction of the public timber cease. It is indeed gratifying to observe that the interest in this important question which the measures adopted by the government have awakened, and the discussions which have followed, have greatly weakened the opposition which existed at the beginning to the policy pursued by this department. Even in States and Territories where the timber necessary for domestic and business purposes can be obtained only from the public lands, unless imported from a distance, a healthy public opinion seems to be springing up which recognizes that an indiscriminate destruction of the forests, and especially the denudation of the mountain slopes of the timber lands covering them, must inevitably result in incalculable and irreparable injury to the economical interests of those States and Territories, and become ultimately destructive to the prosperity of their people. This is an observation which by painful experience has forced itself upon every civilized nation on earth; and it is to be hoped that the American people will become mindful of it while it is yet time to remedy the evil already wrought by the reckless improvidence which has so far prevailed.

While the measures taken by this department have undoubtedly produced a good effect in many localities, it must be kept in mind that the limited means allowed by Congress permitted only a comparatively small field to be covered by its operations. The greatest danger of a wholesale destruction of our forests, and of the disastrous consequences of such destruction will bring after it, exists in those States and Territories where the timber indispensably required for domestic use and local industry must be taken from the public lands, there being no timber in private possession, and the public lands being mostly unsurveyed and not subject to purchase or entry.

In my last annual report I discussed the inadequacy of the laws enacted by the last Congress "authorizing the citizens of Colorado, Nevada, and the Territories to fell and remove timber on the public domain for mining and domestic purposes," and providing "for the sale of timber lands in the States of California and Oregon and in Washington Territory." The opinion I then ventured to express, that the first of these acts would be

taken advantage of not only by settlers and miners to provide economically for their actual current wants, but by persons who would see in it a chance to make money quickly; that it would stimulate wasteful consumption beyond actual need and lead to wanton destruction, and that the machinery left to this department to prevent or repair such waste and destruction through the enforcement of rules to be made by the Commissioner of the General Land Office would be found inefficient for that purpose, has already in many places been verified by experience; also the predictions made by the Commissioner of the General Land Office with regard to the effect of the second one of the above-named acts. Referring to what was said about these laws in my annual report, I repeat my earnest recommendation that they be repealed, and that more adequate legislation be substituted therefor.

It is by no means denied that the people of the above-named States and Territories must have timber for their domestic use as well as the requirements of their local industries. Neither is it insisted upon that the timber so required should be imported from a distance, so that the forests in those States and Territories might remain intact. This would be unreasonable. But it is deemed necessary that a law be enacted providing that the people may lawfully acquire the timber required for their domestic use and their local industries from the public lands under such regulations as will prevent the indiscriminate and irreparable destruction of forests, with its train of disastrous consequences. It is thought that this end will be reached by authorizing the Government to sell timber from the public lands principally valuable for timber thereon, without conveying the fee, and to conduct such sales through government officers under such instructions from this department as will be calculated to prevent the denudation of large tracts, especially in those mountain regions where forests once destroyed will not reproduce themselves. I have no doubt that under such a law, well considered in its provisions, the people of those States and Territories would be enabled to obtain all the timber they need for domestic as well as industrial purposes at reasonable rates, and that at the same time the cutting of timber can be so regulated as to afford sufficient protection to the existence and reproduction of the forests, which is so indispensable to the future prosperity of those regions. I venture to express my opinion that the enactment of such a law has become a pressing necessity, and cannot much longer be delayed without great and irreparable injury to one of the most vital interests of the people. I therefore commend to the consideration of Congress the bill introduced as Senate bill No. 609 in the last Congress.

The subject of the destruction of forests by fire also calls for early and earnest attention. In most, if not all, of the States where timber lands are in private possession, the setting of fires in them is made a highly punishable offense by statute. But there is no law of the United States providing specifically for the punishment of such offenses when committed on



public lands. It is a matter of experience that such fires on the public lands of the Western States and Territories are sometimes set by Indians, but in a majority of cases by hunters, mining prospectors, and tourists who negligently leave their camp-fires burning when moving from place to place, as well as by persons who deliberately set timber on fire for the purpose of deadening and thus preparing it for particular use. It is said that larger areas of timber land are devastated by such fires than by all other kinds of depredation, and this is probably true. I therefore repeat the recommendation made in my first annual report, that a law be enacted prescribing a severe penalty for the willful or negligent setting of fires upon the public lands of the United States, and also for the recovery of all damages thereby sustained. It may in many cases be difficult to obtain the testimony necessary for the conviction of persons guilty of this offense; but if the law is successfully enforced only in some instances, it will serve to direct general attention to the danger to which any one who willfully or negligently sets fire to public timber exposes himself, and thus to make many persons, who so far have given no thought to the possible consequences of their negligence or recklessness, more careful in the future.

I would also repeat the recommendation made in former reports that the President be authorized to appoint a commission, composed of qualified persons, to study the laws and practices adopted in other countries for the preservation and cultivation of forests, and to report to Congress a plan for the same object, applicable to our circumstances. The time is fast approaching when forest-culture will be to the people of the United States as important a question as it is in older countries; and then it will be a subject of painful wonder to thinking men, how it could have been so long neglected.

#### REDWOOD AND BIG TREES OF CALIFORNIA.

The waste and destruction of the redwood (*Sequoia sempervirens*) and "big trees" (*Sequoia gigantea*) of California have been and continue to be so great as to cause apprehension that these species of trees, the noblest and oldest in the world, will entirely disappear unless some measure be soon taken to preserve at least a portion of them. I am informed that in the more inaccessible sections of the coast range in the northern and on the west side of the Sierra Nevada Mountains in the southern section of California, some forests of these trees still remain, that may and should be preserved, either wholly or at least in part. The importance of preserving these species of trees in sufficient quantity to serve to this and coming generations as an illustration of the magnificence of the grandest of primeval forests, is so great as to have attracted the attention of men of science in both Europe and America, from some of the most eminent of whom I have received communications on this subject. It is especially desirable that the big trees in the above named localities be preserved, as the "Mariposa Grove" now celebrated for

specimens of that species, is small and many of the large trees in it injured by fire.

I would therefore recommend that the President be authorized to withdraw from sale or other disposition an area at least equal to the townships in the coast range in the northern, and an equal area in the southern part of the State of California, the precise form and location of the tracts to be determined at his discretion.

#### PRIVATE LAND-CLAIMS.

In each of my annual reports I have called your attention to the necessity for legislation by Congress, providing a way for the speedy settlement of the private land-claims in the territory (especially California) acquired from Mexico by the treaty of Guadalupe Hidalgo in 1848, and the Gadsden treaty of 1853, than is now provided by law.

The reasons for asking such legislation are—

- First. The slow progress made under existing laws in the settlement of said claims.
- Second. The large number of claims still remaining unsettled, covering large areas of land which interfere with and retard the sale and disposal of the public lands.
- Third. The want of harmony between the land system of the United States and the system under which said grants were made, which engenders strife and conflict between the land claimants and settlers.

No law has thus far been enacted by Congress to provide a speedy settlement of such claims since I first called your attention to the subject, although several bills have been introduced looking to that end.

All of the reasons to which I have heretofore invited your attention still exist, and the rapid settlement of said territory, both for agricultural and mining purposes, has greatly intensified the necessity for such a law.

#### GEOLOGICAL SURVEY.

Under the provisions of an act of Congress approved March 3, 1879, the Geological and Geographical Survey of the Territories, and the Geological and Geographical Survey of the Rocky Mountain Region, hitherto conducted under the supervision of the Department of the Interior, were discontinued on the 30th of June, 1879. The office of Director of the Geological Survey was established by the same act, and \$100,000 were appropriated for the expenses of said survey and for the classification of the public lands and examination of the geological structure, mineral resources, and products of the national domain, to be expended under the direction of the Secretary of the Interior.

In accordance with the provisions of the act, the President appointed by and with the advice and consent of the Senate, Mr. Clarence Dutton, a gentleman eminently qualified, to conduct the survey. No report has yet been made of his operations in the field; but advices received indicate a season of successful labor and satisfactory results.

## PUBLIC LANDS COMMISSION.

The act of March 3, 1879, authorized the appointment by the President of three persons, to form, in connection with the Commissioner of the General Land Office and the Director of the Geological Survey, a commission on the codification of existing laws relating to the survey and disposition of public lands. It was made the duty of the commission to report to Congress within one year from the time of its organization: First, a codification of the present laws relating to the survey and disposition of the public domain; second, a system and standard classification of public lands, as arable, irrigable, timber, pasture, swamp, coal, mineral lands, and such other classes as may be deemed proper, having due regard to humidity of climate, supply of water for irrigation, and other physical characteristics; third, a system of land measuring surveys adapted to the economic uses of the several classes of lands; and fourth, such recommendations as they may deem wise in relation to the best method of disposing of the public lands of the western portion of the United States to actual settlers.

The following named gentlemen were appointed as members of the commission July 1, 1879: J. W. Powell, A. T. Britton, Thomas Donelson. The commission, consisting of the above named, together with the Commissioner of the General Land Office and Director of the Geological Survey, organized on the 8th of July last, and has since been continuously at work discharging the duties imposed by the law.

The commission has visited all the Territories and the Pacific States, and taken much testimony as to the character and the classification which should be made of the public lands in the various localities visited.

It is believed by the commission that it will be able to report on the classification of the lands, and the proposed changes in the laws for the survey and sale of the same, on or about January 1, 1880. The work of codifying existing land laws will require a much greater length of time for its completion.

## BUREAU OF RAILROAD ACCOUNTS.

The report of the Auditor of Railroad Accounts herewith presented gives an abstract of the operations of his office under the laws relating to indebted Pacific Railroad Companies and certain Land-grant Railroad Companies during the fiscal year ending June 30, 1879.

The necessity which existed for the creation of this bureau was pointed out in my last annual report, and is more fully shown by the experience of last year.

It is suggested by the Auditor in regard to the accounts for services performed by the Pacific Railroad Companies that they be referred by the several accounting officers to this Department or to the First Auditor of the Treasury for revision, record, and report, before payment is



made, for the reason that only in this or some similar way the interest of the government in this respect can be protected or a statement of the account between these companies and the United States be given.

In performing his duties under the law the Auditor has, during the last fiscal year, traveled over many thousand miles of railroad.

In passing over these railroads and examining into their condition he has found the strongest evidence of returning prosperity and increased immigration in the Western and Pacific States. The new rapidly-growing new settlements insure permanent improvement to the business of both the railroads and the adjacent country.

The growth of towns is mentioned by him as the result of a liberal policy and effort of the western railroad companies—showing what cultivation of good relations between the railroads and the people can accomplish.

These efforts of the railroad companies as well as the yearly increasing harvests, the great development of the mineral wealth of the West and the returning confidence in the stability of values, constitute, mainly, in his opinion, the basis of the improvement in the business of the railroads.

The increase of construction, business, and profit, during the year ending October 31, 1879, is shown to have been particularly large on the railroads west of Mississippi; as to railroad construction, it is stated that for ten months ending October 31, 1879, there were built in the United States 2,000 miles of new railroad, of which over 2,000 miles were west of the Mississippi, while the average new construction for the five years previous, taking, of course, only the first ten months of each year—amounted to only 1,600 miles.

It is remarkable, however, that, notwithstanding the large increase of population in the West, the facilities afforded for travel, reduction of rates, and a general increase in railroad business, *passenger traffic has increased*, indicating, as the auditor believes, either that the people cannot afford to travel, or that the railroad companies have not yet solved the problem of passenger transportation.

The regular work of reporting to the Auditor's office by the railroad companies has been simplified and reduced to a single semi-annual return, and the great desirability to the railroad companies themselves pointed out of keeping their books and accounts in such a manner as to be able to make full and satisfactory reports, since it will enable them to know just what it costs to do certain work, where to retrench, and where to improve.

In this regard the Auditor deems it well if some line were drawn either by State or National authority, so that certain information, absolutely necessary for a stockholder or creditor to know the condition of a company's property and affairs, or such as may be required for the Congress or State and National legislatures can be easily and promptly furnished. Reports of railroad companies, if not uniform as to time or facts, are almost valueless for publication or comparison.



In order to protect the interests of the government, it has been found necessary that the Pacific Railroad Companies keep separate accounts of the business of the subsidized and unsubsidized portions of their roads, and the Auditor has therefore required them to be so kept.

A compendium of the laws of the United States relating to the Pacific Railroad Companies has been made and appended to the report, which will be valuable for reference in all the departments of the government.

The more important decisions of the Supreme Court of the United States in cases affecting the Pacific Railroad Companies are printed in full in his report, as well as a synopsis of the decisions in all other cases relating to them.

The Atchison, Topeka and Santa Fé Railroad Company has a suit against the United States now pending in the Court of Claims, relating to the question of the amount of deduction to which the government is entitled for the use of its railroad free of toll or other charge. The Union Pacific also has a suit pending in the same court touching the right of the United States to fix the rate of compensation for carrying the mails on the Pacific Railroad. When these questions are finally determined the Auditor sees no cause for further contests before the courts, and no reason why the relations between the government and the subsidized and land-grant railroads should not be such as to secure the government service by the railroads at the lowest rates, and to the railroad companies prompt settlement and payment for the same. It appears that to March 3, 1871, over two hundred million acres of the public lands had been granted to States and corporations for railroad purposes, of which over forty-four million acres have been patented, and of which more than thirty-one million acres were for railroads "in whole or in part west, north, or south of the Missouri River."

The money value of these thirty-one million acres of land, at the average price heretofore obtained, the Auditor states to be over one hundred and forty million dollars. He deems it questionable, in view of the conditions attaching to these grants, whether their proceeds can be used for any other purpose than the construction of the railroad for which the grant was made (as, for distribution among the stockholders, in building other railroads), and calls attention to the further fact that the laws making such grants provide that the United States mail shall at all times be transported at such price as Congress may by law direct. The amount of the United States bonds issued to the Pacific Railroads \$64,623,512; the miles of railroad so subsidized is 2,495.0525; and the average of this money subsidy is \$25,900.66 $\frac{2}{3}$  per mile.

The miles of railroad subsidized by land grants under the Pacific Railroad acts—the Pacific Railroad and branches—are 3,035.85; the quantity of land already patented to the companies being 6,517,075.04 acres, the money value of which at \$5 per acre is \$32,585,375.20, or \$10,733.52 per mile.

The principal of the bonds issued to the Pacific Railroad Companies is.....	\$64,623,515
Interest at 6 per cent. to June 30, 1879.....	43,712,450
Total, principal and interest.....	\$108,335,965
The total amount of compensation for services rendered by the companies covered into the Treasury to June 30, 1879, was.....	\$12,915,500
Of which there is applicable to payments of bonds and interest.....	8,387,290
To payment of 5 per cent. net earnings.....	4,201,340
To payment into sinking fund.....	326,940

The interest belonging to the sinking fund was \$1,202.50, and total balance against the railroad companies was \$95,419,168.81.

The amount due by the government on December 31, 1878, and withheld from the Union and Kansas Pacific Companies on account of transportation, will more than offset the \$2,737,576.85 payable by them on account of the "five per cent." of their net earnings; but of the amount payable by the Central Pacific, \$1,978,688.38, the amount withheld from transportation is insufficient by the sum of \$648,271.96\*, payment of which amount in cash the Auditor has required of the company.

The result of the "5 per cent." suit against the Union Pacific Railroad Company has been that the United States obtained judgment for \$1,208,337.34, which is \$1,029,547.08 more than the company admitted to owe; and the result of the examination of the accounts of the Central Pacific, undertaken by the Auditor immediately after the decision of the "sinking-fund case" by the Supreme Court, has been that the amount due by that company from November 6, 1869, to December 31, 1878, was \$1,978,688.38, or \$745,391.86 more than the company's own statement admitted.

It is considered important that the sinking fund be credited promptly with all transportation moneys to which it is entitled; otherwise the companies will have just cause for complaint, as the act requires monthly deposits by the companies to be made at a given time in each year.

Under the present practice of the departments, by which many of the accounts do not even reach the accounting-officers by the time named in the act, it will be almost impossible for these settlements to be completed within the period stated in the act—namely, calendar-year settlements—to be made by the first day of February in the following year.

Mr. A. B. Nichols, of Philadelphia, was appointed to the position of railroad engineer in the office of the Auditor of Railroad Accounts on August 18, 1879, and has since then examined into the condition of the subsidized and land-grant railroads. His report is given with that of the Auditor.

During the annual inspection it was found that improved business, especially on the Western roads, had induced great improvement in

\*This amount has been already deposited in the Treasury by the Central Pacific Railroad Company.



condition of road-bed, track, bridges, and equipment of the railroads visited.

Many defects have been pointed out by the engineer, which it is expected the companies will remedy. The general condition of the Pacific Railroads is better than was anticipated.

Since 1876 the local business on all of these railroads has improved, but more particularly on the Kansas Pacific, the Central Branch Union Pacific, the Atchison, Topeka and Santa Fé, and the Burlington and Missouri River Railroads, located in the States of Kansas and Nebraska.

	In 1876.	In 1878.
The gross earnings of the Central Branch Union Pacific being .....	\$172,852 68	\$624,953 77
The gross earnings of the Atchison, Topeka and Santa Fé being .....	2,486,582 67	3,950,868 09
The gross earnings of the Burlington and Missouri River Railroad, about .....	900,000 00	1,921,350 00

The Auditor further shows, by a statement regarding the business of most of the railroads in the United States, that while the gross earnings of these roads for the year 1878 increased about  $3\frac{1}{2}$  per cent. over those of 1877, the increase of net earnings was nearly  $9\frac{1}{4}$  per cent., indicating greater economy in operating expenses.

#### UNION PACIFIC RAILROAD.

The report of the engineer shows that the line and grade of the Union Pacific Railroad, and the road-bed and track, can be improved in many respects.

The road has now 460 miles of track laid with steel. Iron bridges are being substituted for wooden. The equipment of the road is in good condition, and a full supply of every kind on hand.

About 30 per cent. of the operating expenses, that is to say, \$1,654,795.82, were expended during the calendar year of 1878 on the maintenance of way, bridges, and buildings.

It is contemplated to build a new passenger depot at Ogden, and to improve the arrangement of yard, engine-houses, and shops.

Among the most valuable assets of this company are its coal mines at Carbon, Almy, and Rock Springs, the product of which it will be to the interest of the company to furnish at the lowest rate possible to settlers and others on its line.

The Union Pacific Railroad Company furnishes reports from which the following statements are derived:

Length of subsidized line .....	1,038.68
Leased to Central Pacific .....	5.00
Operated by Union Pacific .....	1,033.68

The company owns:

Locomotives .....	172
Passenger cars .....	124
Baggage, mail, and express cars .....	41
Freight and other cars .....	3,216

And its reports show:

Stock subscribed.....	\$36,783,000
Stock issued.....	30,762,304
Par value.....	100
United States subsidy bonds.....	27,233,511
Other funded debt.....	50,188,000
Total stock and debt.....	114,186,815
Floating debt and interest accrued to June 30, 1879, on subsidy and other bonds.....	17,090,712
Bonds and stock of, and investments in other companies.....	\$6,973,847
Material on hand.....	\$872,671
Cash on hand.....	939,302
Accounts receivable.....	3,522,597
	\$5,334,570
Cost of road, equipment and Missouri River bridge, as per company's books.....	\$120,472,193
Earnings, year ending June 30, 1879—Passenger.....	\$3,128,371
Freight.....	8,397,932
Miscellaneous.....	1,378,541
Total earnings.....	\$12,904,844
Operating expenses.....	5,398,293
Net earnings.....	\$7,506,551
Interest paid.....	\$4,237,111
Dividends paid.....	\$1,031,722
Acres land unsold.....	10,460,700

The Auditor further states that under the act of May 7, 1878, the per cent. of net earnings for the year ending June 30, 1879, would be follows:

Ordinary net earnings.....	\$7,506,551
Less interest on first mortgage bonds.....	1,633,860
Net earnings under the law.....	\$5,872,691
One-half transportation applied to interest.....	\$538,500
One-half transportation to sinking fund.....	538,500
Five per cent. under acts of 1862 and 1864 applied to interest.....	293,633
Additional payment under act of May 7, 1878, for sinking fund.....	97,531
Total: twenty-five per cent. of net earnings.....	\$1,468,164

Under the laws in force to June 30, 1878, there would have been—	
Retained half transportation.....	\$538,500
And five per cent. net earnings.....	375,322
Total.....	\$913,822

It appears also that, under the sinking fund act, the net surplus at disposal of the company for the last fiscal year after payment of interest and dividend would be \$725,010.07.

Your attention is also invited to the recommendations and views



the Auditor regarding money invested by this company in branch railroads, its express business, Pullman sleeping-car arrangement, and to the suggestion that the company should run a fast through mail and passenger train.

## CENTRAL PACIFIC RAILROAD.

The Central Pacific Railroad Company has, since the last report of the Auditor, complied with the law and furnished such statements as have been required. From these statements it appears that—

the number of miles subsidized is.....	860.66
the number of miles operated .....	2,323.61
locomotives owned, 297; leased, 35; total.....	292
passenger cars owned, 201; leased, 37; total.....	293
baggage, mail, and express, cars owned, 56; leased, 12; total.....	68
freight and other cars owned, 4,641; leased, 887; total .....	5,528
stock subscribed .....	\$62,608,800 00
par value of shares.....	100 00
stock issued .....	\$54,275,500 00
subsidy bonds .....	\$27,855,680 00
unded debt .....	56,394,000 00
floating debt .....	6,936,089 00
interest due and accrued on funded debt .....	1,608,438 00
balance of interest due and accrued on United States bonds.....	16,089,537 00
<b>Total debt .....</b>	<b>\$108,883,744 00</b>
<b>total stock and debt .....</b>	<b>\$163,159,244 00</b>
cost of road proper .....	\$134,921,352 00
equipment .....	8,014,644 00
real estate .....	1,499,432 00
<b>Total cost of road and equipment, &amp;c.....</b>	<b>\$144,435,428 00</b>
cash, materials, and sinking funds.....	\$6,256,374 00
bonds and stocks.....	162,044 00
Miscellaneous investments .....	2,502,975 00
<b>For year ending June 30, 1879:</b>	
passenger earnings.....	\$5,185,802 00
freight earnings.....	10,655,733 00
United States mail .....	507,040 00
Miscellaneous earnings .....	1,263,106 00
<b>Total .....</b>	<b>\$17,611,681 00</b>
operating expenses .....	8,730,384 00
<b>Ordinary net earnings .....</b>	<b>\$8,881,297 00</b>
interest paid.....	\$3,747,666 00
lands unsold (acres) .....	11,464,575
transportation withheld in excess of the amounts authorized to be retained under the acts of July 1, 1862, and July 2, 1864.....	\$1,454,268 44

Due United States on account of 5 per cent. of net earnings to June 30, 1878 .....	\$1,871,430
Same to December 31, 1878 .....	107,258
Due United States on account of transportation requirement for sinking fund, under act May 7, 1878.....	123,852
Due United States as additional payment to make 25 per cent. of net earnings under act of May 7, 1878.....	*181,329
Total due United States .....	\$2,283,869

Further details as to the settlement of these accounts and the difficulties under which they were made are given in the Auditor's report.

From the statement of the engineer it appears that many tunnels on this road should be improved by masonry lining instead of timber; that the track and road-bed are in good condition; and that many bridges and much of the trestle work need renewing and improving.

The Auditor highly commends the hospital of the company at Sacramento, and the service and condition of the great snow gallery on the Sierra Nevada Mountains extending over 28 miles.

The equipment of the road is in good condition. The remarks of the Auditor regarding second-class sleeping-cars, ferry service of the company between Oakland and San Francisco, the filling up of a portion of the long wharf at Oakland, and the new mammoth train-transfer steamer "Solano," the sleeping and parlor car business, and increase of speed are also interesting and worthy of consideration.

Particular attention is invited to the fact that the total amount of the 5 per cent. of the net earnings, as ascertained by the Auditor, from November 6, 1869, to December 31, 1878, is \$1,978,688.38, or \$745,391.86 in excess of the company's statement; also to the fact, quite as important, that the money is all in the Treasury of the United States.

#### KANSAS PACIFIC RAILWAY.

The Kansas Pacific Railway Company have continued to make reports as called for.

Miles road operated .....	77
Miles owned.....	67
Miles subsidized with lands.....	63
Miles subsidized with bonds .....	39
Number of locomotives.....	
Passenger-cars.....	
Baggage, mail, and express-cars .....	
Caboose-cars .....	
Freight and other cars .....	1
Stock subscribed.....	\$9,992,500
Par value of shares.....	100
Stock issued .....	\$9,689,950
Subsidy bonds .....	\$6,303,000

\* This amount has been already deposited in the Treasury by the Central Pacific Railroad Company.



unded debt.....	\$22,130,100 00
loating debt.....	1,219,080 00
interest on funded and floating debt.....	5,621,366 00
interest on subsidy bonds .....	2,291,702 00
<b>total debt.....</b>	<b>\$37,565,248 00</b>
ock and debt .....	\$47,255,198 00
ost of road and equipment.....	\$34,359,540 00
essenger earnings for year ending June 30, 1879.....	\$1,005,900 59
reight earnings.....	3,033,421 50
iscellaneous earnings.....	246,861 62
<b>total.....</b>	<b>*\$4,286,183 71</b>
erating expenses .....	\$2,327,925 51
et earnings .....	\$1,958,258 20
interest paid.....	\$1,180,043 00
res of land unsold .....	4,569,483

This company having defaulted in the payment of interest on its bonds, receivers were appointed and operated the road from November 21, 1876, to June 17, 1879, since which time it has been operated by the Union Pacific Railroad Company. The road is reported in good condition, wooden bridges being replaced by iron ones, and transportation service prompt and safe.

The company operates its own Express, but runs Pullman sleeping-cars. Its account with the United States regarding 5 per cent. of net earnings and the half transportation compensation withheld has not yet been adjusted.

#### CENTRAL BRANCH UNION PACIFIC RAILROAD.

This company has rendered but very meager reports, which, with other information, show the following facts: Miles operated, 100; miles operated under lease, 158; gross earnings, \$624,953.77; operating expenses, \$360,30.52; net earnings, \$264,323.35; amount expended for new equipment, \$140,000; rentals of leased lines, \$66,000; taxes, \$24,000.

The engineer's report shows that the subsidized line of this company is not in good condition and that it is not up to the standard required, many bridges requiring immediate attention. The building of branch roads during the last two years has so increased its business that large additions to equipment have been required.

The transportation account and the 5 per cent. account of this company are still unsettled.

#### SIoux CITY AND PACIFIC RAILROAD.

The condition of the property of this company in Iowa is reported as good, but the condition of the property in Nebraska is reported as inferior, requiring immediate and extensive repairs. The reports of the company show length of road operated, 158.13 miles; road owned, 107.04;

subsidized line, 101.77; number of locomotives, 13; number of passenger cars, 10; number of baggage, mail, and express cars, 5; number of freight and other cars, 194.

Stock subscribed, \$2,068,400; stock issued, \$2,068,400; funded debt, \$1,628,000; subsidy bonds, \$1,628,320; floating debt, \$126,283; accrued interest on funded debt, \$50,115; accrued interest on subsidy bonds, \$981,753; total debt, \$4,414,451; stock and debt, \$6,482,851; cost of road, \$5,350,138. Passenger earnings for the year ending June 30, 1879, \$86,187; freight earnings, \$185,640; miscellaneous earnings, \$81, total earnings, \$353,329; operating expenses, \$247,173; net earnings, \$106,156; interest paid, \$110,695; deficit, \$4,539.

#### TEXAS AND PACIFIC RAILWAY.

The usual report of this company for the year ended June 30, 1879, this department was received and referred to the Auditor of Railroad accounts on October 25, 1879. The company owns and operates 44 miles of road. Number of locomotives, 49; passenger cars, 29; baggage, mail, and express cars, 13; freight and other cars, 972. Stock issued, \$6,996,000; par value, \$100. Funded debt, \$19,123,406; floating debt, \$1,278,813; unpaid interest, \$202,595; total debt, \$20,694,814; stock and debt, \$27,690,814. Cost of road, \$26,906,901. Passenger earnings, \$456,576; freight earnings, \$1,582,926; miscellaneous earnings, \$96, total earnings, \$2,136,143; operating expenses, \$1,397,514; net earnings, \$738,629; interest paid, \$712,417. Lands unsold granted by State of Texas, 4,756,130 acres.

#### SOUTHERN PACIFIC RAILROAD.

From reports made to the Auditor regarding this road the following figures are obtained: Miles operated, 161.14; miles owned, 711.14; miles leased to Central Pacific, 550.81 miles; number of locomotives, 44; passenger cars, 62; baggage, mail, and express cars, 18; freight and other cars, 1,157. Stock subscribed, \$36,763,900; stock issued, \$36,477,900. Funded debt, \$29,186,000; floating debt, \$963,068; accrued interest on funded debt, \$409,410; total debt, \$30,558,478; stock and debt, \$67,035,000. Cash, material, and accounts due, \$219,889. Cost of road, \$64,813,154; cost of equipment, \$1,902,124; total cost of road and equipment, \$66,715,278. Passenger earnings, \$477,925; freight earnings, \$471,262; miscellaneous earnings and rent of road, \$3,350,208; total earnings, \$4,299,395; operating expenses, including taxes and insurance, \$2,588,297; net earnings, \$1,711,098; interest paid, \$1,890,237. Lands unsold, 9,245,118 acres.

#### NORTHERN PACIFIC RAILROAD.

This company furnishes the Auditor with statements as follows: Miles of road operated, 720; miles owned, 560. Stock authorized, \$100,000,



common stock issued, \$27,812,700; preferred stock issued, \$46,346,094; total stock issued, \$74,158,794. Number of locomotives, 55; number of passenger cars, 23; baggage, mail, and express cars, 11; freight and other cars, 1,303. No funded debt. Preferred stock unissued used as collateral for moneys borrowed; floating debt, \$974,019; stock and debt, \$75,132,813. Cost of road, \$20,931,966; earnings ten months to June 30, 1879, \$1,167,262; operating expenses, \$711,464; net earnings, \$455,798. Lands unsold, 44,687,781 acres.

#### SAINT LOUIS AND SAN FRANCISCO RAILWAY.

This company's reports furnish the following information: Miles operated, 472.05; miles owned, 292.5. Number of locomotives 29; number of passenger cars, 10; baggage, mail, and express cars 8; freight and other cars 836; Stock issued, \$21,642,100; funded debt, \$5,292,000; floating debt, \$73,436; unpaid interest, \$216,999; total debt, \$5,582,435; stock and debt \$27,224,535; cost of road, \$26,198,626; cost of equipment, \$729,166; cost of road and equipment, \$26,927,792. Passenger earnings to December 31, 1878, \$195,133; freight earnings, \$947,378; miscellaneous earnings, \$59,140; total earnings, \$1,201,651; operating expenses, \$598,134; net earnings, \$603,517; interest paid, \$546,965. Acres of land unsold, including grant to Atlantic and Pacific Railroad, 41,784,253.

#### BURLINGTON AND MISSOURI RIVER RAILROAD IN NEBRASKA.

This company has neglected to make reports. The Auditor furnishes the following figures from other sources: Miles operated, 443; miles owned, 190.5. Number of locomotives, 29; passenger cars, 16; baggage, mail, and express cars, 12; freight and other cars, 1,230. Stock issued, \$9,390,800; funded debt, \$10,933,300; floating debt, \$629,581; unpaid coupons, \$255,222; total debt, \$11,818,103; stock and debt, \$21,208,903; cost of road and equipment, \$20,541,852. Earnings for the year ending December 31, 1878: From passengers, \$352,000; from freight, \$1,385,000; miscellaneous earnings, \$184,350; total earnings, \$1,921,350; operating expenses, \$618,677; net earnings, \$1,302,673; interest paid, \$673,798; dividends, \$241,512. Acres of land unsold estimated 1,000,000.

#### DENVER PACIFIC RAILROAD.

From reports made by the receiver of this road, the following figures are given: Miles of road operated, 132.89; road owned and subsidized with lands, 105.89. Number of locomotives, 6; passenger cars, 4; baggage, mail, and express cars, 3; freight and other cars, 75. Stock subscribed and issued, \$4,000,000; funded debt, \$2,271,000; floating debt, \$173,130; total debt, \$2,444,130; total stock and debt, \$6,444,130. Cost of road, \$6,495,350; passenger earnings to June 30, 1879, \$60,965.57; freight earnings, \$106,887.47; miscellaneous earnings, \$20,737.46; joint traffic earnings, \$64,265.44; total earnings, \$252,855.94; operating expenses, including taxes, \$113,346.75; net earnings, \$139,509.19. Acres of land unsold, 908,347.95.

## OREGON AND CALIFORNIA RAILROAD.

From reports made by this company and other sources the following figures are given: miles subsidized, estimated at 300; miles operated, 200; number of locomotives, 14; passenger cars, 11; baggage, mail, and express cars, 4; freight and other cars, 215; par value of shares, \$100; stock issued, \$20,000,000; funded debt, \$10,950,000; floating debt, \$800,000; total debt, \$11,750,000; total stock and debt, \$31,750,000; cost of road, \$4,806,208.98; cost of equipment, \$499,497.64; cost of real estate, \$189,907.64; passenger earnings, \$232,860.76; freight earnings, \$345,482.17; express and mail earnings, \$30,414.60; miscellaneous earnings, \$39,359.35; total earnings, \$648,116.88; operating expenses, including taxes, \$410,451.03; net earnings, \$237,665.35.

## OREGON CENTRAL RAILROAD.

From reports furnished and other sources the following is compiled: Miles subsidized and operated, 47.50; number of locomotives, 4; passenger cars, 2; baggage, mail, and express cars, 2; freight and other cars, 42; stock subscribed, \$5,000,000; par value of shares, \$100; stock issued, \$4,980,050; funded debt, \$4,695,000; floating debt, \$1,189,000; total debt, \$5,884,002.72; total stock and debt, \$10,864,052.72; cost of road, \$1,202,262.97; passenger earnings, \$26,001.60; freight earnings, \$41,460.07; miscellaneous earnings, \$2,658.93; total earnings, \$70,120.60; operating expenses, including taxes, \$69,849.82; net earnings, \$27,270.78.

## APPENDIX, RECOMMENDATIONS, -ETC.

The Auditor's report is accompanied by an appendix, containing statements and compilations of facts relating to the Pacific and Oregon grant railroad companies, the laws affecting them, statements of the affairs of the companies, their receipts, expenditures, and operations, the accounts between the United States and the Pacific Railroad Companies, the condition of the respective land grants, and other matters of general interest to railroad companies.

The Auditor submits several recommendations of importance, to which attention is invited. He recommends that the Pacific Railroad Act be amended so that any of these companies which may abandon any portion of the subsidized railroad, or which may divert their business from a subsidized to an unsubsidized railroad, be required to transfer the property and condition attached to the subsidized to the new and unsubsidized line, in order that the interests and rights of the United States may be protected; or, if that is not done, that all through traffic be required to be done only on the subsidized line.

The question involved is a new one and seriously affects the rights of the United States.

Another recommendation is submitted relative to the practical working of the sinking-fund act approved May 7, 1878. It appears that it

impossible to have the settlements made as contemplated under the provisions of that act in time for the money requirements to be paid into Treasury by the first day of February in each year; the Auditor therefore recommends that the day be changed to the first day of April each year; and also that the settlements and payments for the sinking-fund be required to be made semi-annually instead of annually. He further recommends that the investments of the sinking-fund be authorized to be made in the first-mortgage bonds of the respective companies, or in such United States bonds as the Secretary of the Treasury may select.

Sinking funds are also recommended by him to be established for the Kansas Pacific, Central Branch Union Pacific, and Sioux City and Pacific Railroad Companies.

In order to prevent misunderstanding as to the locality of his office, and to make the title uniform with those of other bureau officers of this department, it is recommended that the title of the office of the Auditor of Railroad Accounts be changed to "Commissioner of Railroad Affairs."

### PENSIONS.

On the 30th of June, 1879, there were 242,755 pensioners, divided as follows: Army invalids, 125,150; Army widows, children, and dependent relatives, 81,174; Navy invalids, 1,844; Navy widows, children, and dependent relatives, 1,772; surviving soldiers of 1812, 11,621; widows of deceased soldiers of that war, 21,194.

During the year 31,346 new names were added to the list; 908, formerly dropped, were restored; 13,497 were dropped.

The aggregate amount of one year's pension is \$25,493,742.15. The actual payments, however, during the year largely exceeds that sum, as nearly all the claims admitted embrace several years accrued pension. The aggregate amount paid to new pensioners during the year was \$763,758.60.

The number of unsettled pension claims on the 30th of June last was 6,645, exclusive of claims for arrears.

If new original claims continue to be filed as rapidly during the remainder of the year, as they have been for the past nine months, the Commissioner estimates the number of unsettled cases that will be pending at the close of the year at 250,000.

Since the passage of the "Arrears" act, the claims for pension have come in at an unprecedented rate, the invalids nearly double that ever known before in the history of the office.

This large inflow of claims and the consequent accumulation of work has given rise to complaints and much embarrassment, and these must continue until Congress authorizes the employment of a force sufficient to prevent the accumulation of claims.

A new and better system for recording the claims received has been



devised, and, when completed and in operation, will facilitate great labors of the office.

It appears evident that the present force of the Pension Office is inadequate for the prompt disposition of the business before it, and therefore concur in the Commissioner's recommendation for an additional appropriation of \$50,000, to be immediately available for the next year. The Commissioner suggests that the clerical force of the offices of the Adjutant-General and Surgeon-General is not sufficient to enable them to respond with promptness to the large number of claims made upon them.

The Commissioner again calls attention to the present defect in the system of setting claims, and renews his recommendation that the system hitherto presented by him be adopted. In this connection he says:

"Besides being cumbersome and expensive, the present system is an open door to the Treasury for the perpetration of fraud. The affidavits in support of the claims have the same appearance to the officers of the bureau whether false or true. The system, which are established in relation to the production of evidence in attempting to establish the frauds often work a hardship upon the honest claimant. He finds through the death or imperfect recollection of witnesses or for some other cause unable to comply with them, is often defeated, while the fraudulent claimant, by manufacture the necessary testimony to meet them, succeeds in his claim. On the other hand, the change proposed will possess the following advantages over the present system:

1. The testimony and proceedings to establish the pension claims will be of a reliable character. This will facilitate prompt, more just, and more liberal decisions, and protect the Treasury from frauds, while the claimant's expenses will be increased, but rather diminished.

2. The medical examinations being made by unprejudiced government physicians, whose sworn duty it will be to find out and report the exact truth, both the claimant and the government will be relieved from the now too common danger of being the victims of the ignorance, prejudice, or carelessness of a neighborhood physician or surgeon.

3. The special investigation of cases by the special agents will be dispensed with, as no longer necessary for the detection of fraud. The publicity of the proceedings in the neighborhood where the claimants reside will operate to restrain the production of unmeritorious and fraudulent claims, and furnish ample protection to the government against the successful prosecution of any such which may be presented.

But the great point, and the one to which every other consideration should be subordinate, is that the new system, through its public proceedings among the claimant's neighbors, will obtain the truth in the cases in such reliable form that prompt justice will be done to the deserving."

The magnitude of the interests involved commends this system to the considerate attention of Congress. It is evident that the present system, based upon *ex-parte* testimony, exposes the government to loss and makes its detection very difficult. I therefore concur in the recommendation expressed by the Commissioner that a change is essential for the better protection of the government in the payment of pensions.

The Commissioner reports the satisfactory condition of the pension agencies and calls attention to what he deems the inadequate compensation of the agents. In the passage of the act fixing their pay,



expenses incurred by them were not estimated upon, and to afford them relief he recommends that the law be so amended as to allow them eighteen instead of fifteen dollars for each one hundred vouchers prepared and paid.

Appended to the report are interesting tables under the following heads: Number of pension claims received, disposed of, and remaining on hand; number of pensions allowed and increased during the year, with their annual value, together with the yearly value of all pensions on the roll, and the amount paid for pensions during the year; number of pensioners dropped from the rolls during the year, and the cause; appropriations for the payment of pensions for the year, and the amount of disbursements; pension agents' name, location, geographical limits, and amount of funds on hand June 30, 1879; operation of Special Service Division for the year; comparative statement by agencies of the number of pensioners on the rolls at the beginning and close of the year; arrears payments made at each agency, and number of invalids, widows, children, dependent fathers and mothers, respectively; monthly receipt and disposal of claims for twenty-eight months succeeding June 30, 1877; pension claims filed and allowed since 1862; number of pensioners on the roll at the termination of each fiscal year since 1861. These statements give a correct exhibit of the work of the Pension Office, past and present, and afford valuable information to those who are interested in the subject.

#### PATENTS.

The report of the Commissioner of Patents shows a slight decrease of the work of the office for the year ended June 30, 1879.

The number of applications for patents was 19,300, being 357 less than the previous year. The number for design patents was 697; for reissue, 639; for registration of trade-marks, 1,465; for registration of labels, 631; caveats filed, 2,674.

The number of patents granted, including reissues and designs, was 12,471, being 1,629 less than the previous year. The number of trade-marks was 1,144; labels registered, 403; patents withheld for non-payment of final fee, 828.

The total receipts of the office were \$703,146.79, being \$31,741.19 less than those of the previous year.

The expenditures for the year were \$548,651.47. This includes \$5,000 appropriated for the repair of models damaged by the fire, and is not properly chargeable to the current expenses of the office.

The expenditures for the previous year were \$665,906.02; \$50,000 of this being for the repair of models. Excluding the amount appropriated for the repair of damaged models in both years, the current expenditures of the office were \$72,254.55 less than those of the previous year. In referring to this reduction the Commissioner says:

This decrease in the expenditures has been enforced by the reduction of the appropriations, which has been carried so far as seriously to cripple the office and injure the public interests.

The excess of receipts over expenditures was \$154,495.32.

The Commissioner makes several recommendations worthy of special attention. He deems the excess of receipts over expenditures an unjust tax upon inventors, and favors its reduction either by exacting lower fees or by expending the surplus in improving the facilities for transacting the business of the office. He recommends the former course. He calls attention to the inadequacy of the rooms provided for the use of the office, and recommends that temporary accommodations be provided in that portion of the building now being reconstructed.

In his opinion, the interest of the service demands an additional number of clerks and examiners, and to this end he recommends that provision be made by law for ten additional clerks of class one, three of class two, two of class three, one of class four, and fifteen assistant examiners. He suggests also that a portion of the surplus revenues of the office be used annually for the purpose of making additions to the technical library of the office, and for increasing the compensation of clerks and employés, who, while forced to remain in the lower grades because of inadequate appropriations, are showing efficiency entitling them to higher pay.

The Commissioner refers to the present system of preserving models and regards their accumulation as a serious evil, which in time will call for correction. In his opinion, the system is radically defective and ought without further delay to give place to one more permanent.

The experience of the English demonstrates that drawings which conform to a high standard and show the vital features of an invention are sufficient for such examination as their system requires. There are many inventions which could be better shown by a model than by the most accurate scale-drawing. The right to call for a model should be reserved to the office, but none should be filed unless upon the written certificate of the examiner, or upon the special order of the Commissioner.

To secure this better system, statutory provisions are needed and are recommended. To better guard models removed from the office for the purpose of duplication or repair, the Commissioner recommends the enactment of a law authorizing the employment of skilled workmen to make copies of models for official certification, who shall be required to take the oath of office and file bonds, and whose compensation shall be such as may be approved by the Commissioner of Patents, to be paid by those for whom the work was performed.

The Commissioner calls attention to the necessity of some provision being made by which the testimony of foreigners required in proceedings in the Patent Office, and taken in foreign countries, may be subject to the pains and penalties of perjury. This cannot be secured, or even obtained from foreign governments unless proffered by our own. Recommendation is therefore made that a law be passed authorizing the exe-



by United States commissioners, or other United States officers, of commissions issued by foreign governments to take testimony in the United States to be used before foreign patent offices and before all judicial, legislative, and executive departments of foreign governments, and to punish perjury committed in such testimony; the law to be operative only in favor of such governments as shall make like provision for taking testimony in foreign countries, to be used in like manner in the United States.

As to the work of reproducing drawings by photolithography, the Commissioner expresses the opinion that the highest standard possible in the art could be secured at the lowest cost by the establishment of a division in some one of the executive departments, where photolithographic work could be executed for any branch of the service that might require it.

Recommendation is made for an appropriation of \$50,000 for printing the specifications of patents issued prior to November, 1866; also for an appropriation of \$10,000 for the publication of the general index of patentees, from 1790 to 1873. The work is nearly completed and will soon be ready for the printer.

For the reproduction of illustrations for the Patent Office Report for the year 1870, \$6,000 is asked for.

For the reproduction of drawings destroyed by fire it is estimated that an appropriation of \$60,000 will be necessary, and the urgency of the work suggests that the amount be made immediately available.

The Commissioner also recommends that the law relating to the payment of the final fee within six months of the allowance of a patent be so amended as to make the execution of the law possible in all cases. Under the present law, requiring a patent to be dated within six months of its allowance, the payment of the fee on the last day of the prescribed time makes it impossible to conform to the law without resorting to the creation of a new allowance, made upon payment of the final fee too late to admit of the preparation of the patent before the expiration of the six months. The extension of the time, within which a patent may be dated, to seven months from the date of its allowance would obviate the present difficulty.

## EDUCATION.

The Commissioner of Education states that the demand upon his office for information relating to educational matters has been greater during the past year than ever before. He reports that the collection of educational appliances and illustrations in the possession of the office has received numerous visits and proved extremely useful, and recommends that provision be made for its better exhibition, cataloguing, and increase; also, that a librarian be allowed by law, the library of his office containing at the present time 11,000 volumes and 22,000 pamphlets.

The office has sent to correspondents 46,000 pieces of matter, of which there were—

Of letters, circulars, and inquiries .....	1
Documents (packages) .....	2

and has received from its correspondents 30,000 pieces of mail matter, of which

Letters, circulars, receipts, and replies numbered .....	2
Documents (packages) .....	

The printing of the circulars of information has been more than doubled during the year, and yet this work is much behind.

The Commissioner notes a marked advance in the adoption of the approved methods of teaching.

Not least among the progressive movements of institutions for prior instruction is the extension of their advantages to women, adding the provisions secured by colleges endowed especially for them, facing in connection with some of the oldest and wealthiest foundations of young men.

The colleges of agriculture and the mechanic arts are making commendable advance in their appointed province. Great industrial interests are beginning to acknowledge the benefits received from researches and from the trained experts they are sending out. In their work they are ably supplemented by the technical and industrial schools sustained by private endowments.

The increasing practice by professors in our scientific schools of supplementing ordinary class work with extensive field teaching, here is as an interesting example of the tendency toward original investigation developing among our educators.

In professional training some efforts are being made to increase preliminary qualifications, to extend the professional course to at least three years in all ordinary cases, and to so grade the studies as to permit examinations instead of postponing all these severe tests to the end of the entire course.

He notes also the progress made in training in special industries—wood-carving, industrial drawing, cookery, nursing, &c.

The Commissioner expresses the opinion that population in the Territories has outstripped the number of school-houses and teachers, and that the present Territorial provisions for education are inadequate. He renews his recommendation that greater importance be given to educational office in the Territories.

In the continued embarrassed condition of education in the Territories and in the South he finds reason for earnestly renewing his recommendation of the passage by Congress of some measure of financial aid, which he suggests might, at first, be distributed on the basis of illiteracy.



## CENSUS.

In the last annual report of the department it was recommended that new legislation be had in provision for the approaching tenth census of the United States. The considerations which, in the interest alike of economy and of sound statistics, seemed to require that the census should not continue to be taken under the act of May 23, 1850, were set forth at length in the papers accompanying the report. By act of March 3, 1879, Congress instituted a new system of enumeration, and made provision for the tenth and subsequent censuses upon principles widely different from those of the act of 1850. The careful and detailed consideration which has been given to this enactment in the preparations making for carrying its provisions into effect, and the experience which has been had of the workings of the system so far as it has already become operative, have confirmed me in the belief that the new legislation was wise and salutary, and that the results of the census soon to be taken under its provisions and sanctions will fully justify its wide departure from the methods previously in use.

No defect has appeared which in an appreciable degree threatens the integrity of the enumeration, nor has any change in any essential feature of the scheme suggested itself to the department as likely to result in an improvement in the quality of the statistics to be obtained.

The Superintendent of Census in his report recommends that the benefit of the franking privilege be extended to mail matter addressed to the Census Office in response to its inquiries, or in compliance with its requests, by persons not officers of the government; and that one interrogatory, which by the act of March 3, 1879, was introduced for the first time into the so-called population schedule, viz, as to the holders of the public debt, be dispensed with, as unlikely to secure results of value and as certain to hinder the progress of the enumeration if not to engender animosity.

These recommendations meet the approval of the department.

The report of the Superintendent raises the question whether a copy of the returns of enumerators should be provided for by new legislation.

It appears that a copy of the returns would probably cost \$130,000 as a minimum. In his opinion such an expenditure, if it were to be incurred, would properly be looked upon wholly as a measure of insurance against the accidental destruction of the original schedules. The use to which the copy would be put, except in case of such destruction of the originals, would be far too slight to justify the great cost of making the copy.

In fact this use may be regarded, in the consideration of this subject, as absolutely *nil*. The danger to be apprehended to the schedules is not that of their loss prior to or during transmission to the Census

Office, for such losses cannot reasonably be supposed to occur with respect to any but small, fractional portions, which could be replaced by a new enumeration at a cost of a few hundreds, or, possibly, thousands of dollars.

The only appreciable danger to be apprehended affects the accumulated stock of the returns after their receipt at the Census Office.

It is doubtless true, as shown by the Superintendent, that the danger of such destruction during the few months necessary to complete the compilation of the most important statistical results, those which relate to the population of States, counties, cities, and towns, and which classify the population according to color, age, sex, race, and nationality, would be very slight, and that exceptional provisions against such danger could be made at a cost small in comparison with the first cost of a copy of the returns; but it is my opinion that in dealing with a matter so fundamental in our political system as the decennial enumeration of the people for the purpose of apportioning representation among the States, considerations of economy in expenditure should be subordinate, and I recommend that a copy of all the returns made by enumerators under the act of March 3, 1879, be authorized, and appropriation made therefor.

The report of the Superintendent contains an account of the organization and operations of the Census Office subsequently to the passage of the act of March 3, 1879, sufficiently in detail to exhibit the novel features which have been introduced into that service by the express provisions of the act, or in the exercise of the large discretion vested in the Superintendent relative to the agencies to be employed in collecting statistics not directly political in their character.

The operations of that office naturally divide themselves into two groups, those which are preparatory and preliminary to the count of the people, to take place next summer, and those which are directed to the collection of statistics relating to the current twelve months.

Under the act of 1879, as under that of 1850, there is, as the Superintendent remarks, a census day and a census year. The census day is June 1, 1880. The census year comprises the period June 1, 1879 to June 31, 1880; and for the whole of this period the law requires certain important classes of statistics to be collected relating to agriculture, manufactures, mining, and the fisheries, to taxation and public education, to pauperism and crime, to mortality and the causes of death, &c. The act of 1879 differs from that of 1850, by authorizing the employment of enumerators and special agents at the discretion of the Superintendent of Census for the collection of these classes of statistics.

Under this provision, several special investigations of a very important reach have been already set on foot, and others will probably be instituted as the occasion arises.

In making these arrangements careful consideration has been had of the maximum limit of expenditure fixed by the act of March 3, 1879.



It is not my expectation to be obliged to present to Congress any request for a deficiency appropriation under the law as it stands, and I am satisfied that the Superintendent, in all his plans, is legally observing the conditions thus imposed by the law creating his office and providing for the approaching census.

In the preparations for the enumeration which is to be commenced on the first of June, progress has been made to the point of apportioning among the States and Territories the aggregate of 150 supervisorships, authorized by the act of March 3, and dividing the States to which supervisorships in excess of the minimum were assigned into districts of a corresponding number. The duty which the law imposes on the department, of fixing the rates of compensation to be paid to enumerators, is one of great nicety and difficulty.

The conditions, geographical and other, of each section of the country which bear on the facility of enumeration are being thoroughly and systematically studied, in order that the greatest economy and efficiency of service may be combined with the highest attainable equity toward the agents of the government performing this arduous and responsible work.

#### ENTOMOLOGICAL COMMISSION.

The United States Entomological Commission has continued its investigations into the habits of the Rocky Mountain locust or grasshopper, in the permanent Northwest breeding-grounds of the species. The principal aim of the commission has been to get more accurate knowledge of the limits and extent of those breeding-grounds, with a view of preventing the migrations of the winged insects therefrom.

Congress at its last session enlarged the field of the commission's labors by requiring an investigation into the habits of the cotton worm, and of other insects injurious to the cotton-plant and to agriculture. The work in the West and Northwest is being continued by Dr. Packard and Professor Thomas, while Professor Riley has taken charge of the work in the Southern States, and has been industriously pursuing it. Some of the discoveries and practical results have already been embodied in a special bulletin. The losses which insects inflict on the crops of the country amount to many million dollars annually, and the well-directed efforts of intelligent entomologists in endeavoring to prevent these losses have already resulted in much good.

The Southern States have suffered severely from the cotton-worm alone, and are directly interested in this branch of the work of the commission.

A sufficient sum is asked for, to complete in a satisfactory manner the investigations now being prosecuted, and to publish a report thereon for distribution among those interested in the success of the work.

## THE HOT SPRINGS.

The Hot Springs of Arkansas are situated in a narrow ravine between two rocky ridges in one of the lateral ranges of the Ozark Mountain.

The reservation contains about 2,565 acres. The mountain on which the springs are found, and which has been reserved from sale, under the act of March 3, 1877, contains about 265 acres.

Previous to October, 1875, the title to the most valuable portion of the land had been in dispute for more than fifty years. The controversies which existed were finally brought before the United States Court of Claims under the act of May 31, 1870, the provisions of the act giving the right to any person claiming title, either legal or equitable, the whole or any part of the four sections of land known as the Hot Springs Reservation, in the State of Arkansas, to prosecute to final decision any suit that may be necessary to settle the same.

The various parties setting up a claim filed their petitions in the Court of Claims, the cases were consolidated, and after a full investigation, the court rendered a decree in favor of the United States, and adverse to all the claimants. An appeal was taken to the Supreme Court of the United States, and after able arguments by distinguished counsel on both sides, Justice Bradley, in October, 1875, delivered the unanimous opinion of the court, affirming the decree of the Court of Claims.

The act which authorized these suits also provided that if, upon the final hearing of any cause provided for in the act, the court should decide in favor of the United States, it should order the lands into the possession of a receiver, to be appointed by the court, who should have charge of and rent out the same for the United States, until Congress should by law direct how they should be disposed of.

The receiver was duly appointed, and according to the report of the Secretary of the Treasury, the rentals collected by said receiver and turned over to the Treasury amounted to \$33,744.78.

Under the act of March 3, 1877, the office of receiver was abolished, and the President was authorized to appoint three discreet, competent and disinterested persons, who should constitute a board of commissioners, whose duty it was to lay out the lands of the reservation into convenient squares, blocks, lots, avenues, streets, and alleys; designate the tract, including the Hot Springs Mountains, which was to be reserved from sale; to show by metes and bounds, on a properly prepared map, the parcels or tracts of land claimed by reason of improvement thereon, or occupied by each and every such claimant and occupant on said reservation; to hear any and all proof offered by such claimants and occupants and the United States, in respect to said lands and improvements thereon, and to finally determine the right of each claimant or occupant to purchase the same, or any portion thereof, at the appraised value fixed by said commissioners. They were also vested with the power to condemn and remove all buildings or obstructions



the reservation, when the same were necessary to carry out the provisions of the act; fix the value of property condemned, and to issue a certificate or certificates therefor to persons owning the same. It was made the duty of the Secretary of the Interior within thirty days after said commissioners filed their report and map in his office, to instruct the land officers of Little Rock land district to allow the lands to be entered, and to cause a patent to be issued therefor; the claimant or occupant, his heirs, or legal representatives, in whose favor said commissioners had adjudicated, having the sole right to enter and pay for, within twelve months of public notice of right to enter, at the price fixed by said commissioners, the amount of land that they were entitled to purchase, as shown in the certificate issued in their favor. Upon failure to pay the valuation appraised, within the time prescribed, the said lands, together with all other lands, that no one has an adjudicated right to purchase under the act, are to be sold at public sale to the highest bidder for not less than their appraised valuation.

The moneys obtained from the sale of these lands are to be paid into the Treasury in the same manner as other moneys arising from the sale of public lands, and held for the purpose specified and for the further disposal of Congress.

Under the provisions of the act cited, the President, on the 30th March, 1877, appointed the following commissioners: A. H. Cragin of New Hampshire, John Coburn of Indiana, and M. L. Stearns of Florida. Their term of office was for one year, and in 1878 provision was made by Congress for an extension of their time, but owing to an unfortunate omission in the engrossing of the bill, the proviso relating to the Hot Springs failed to become a law; Congress, however, on the 16th of December, 1878, authorized the continuance of the commission for one year, and the same gentlemen were re-appointed by the President.

A preliminary report recently received from the commissioners justifies the belief that their work is about completed and that the requirements of the statute relating to their duties will be fully complied with before the expiration of their term of office. Their labors have been arduous, and, from their nature, somewhat embarrassing; yet they appear to have been performed with a conscientious desire to do justice to all claimants without doing injustice to the interests of the government. If the final results of their labor shall prove as satisfactory as the zeal and good judgment already shown, they will be entitled to great credit for the just settlement of vexed questions and for the laying out of a plan which, if carried out by the citizens of Hot Springs, will make that place a most attractive resort for those who seek its pure air and curative waters.

The efficacy of the waters of Hot Springs has been conclusively proven by the many remarkable cures which have followed their judicious use. When their virtues become more widely known, these springs

will doubtless be visited by thousands who are now strangers to the curative powers. To secure to invalids the fullest possible benefit of the waters, without incurring those impositions which too often mark possessory rights of monopolies, was doubtless one of the principal objects which prompted Congress to reserve from sale this reservation by the act of 1832, and to direct the permanent reservation of the mountain upon which the springs are located in the act of March 3, 1877.

The reservation of these springs by the United States imposes upon the government certain responsibilities which it cannot, or ought not to, avoid. A town, doubtless at no distant day to be a city, is growing up around the borders of this reserved tract, and entirely dependent upon it for its prosperity. Whatever can be done properly by the government to secure and retain the full benefit of the waters under its control for the use of the people and the preservation of other health and agricultural resources which are now in its possession should not be overlooked. In my opinion, all the mountains within the four townships should be withdrawn from sale. Their only value is in the fine growth of timber which covers them, and this timber is needed to protect the valley of Hot Springs and adjoining lands from the fierce rays of the sun. It would be impossible to foretell the result which would follow the denuding of these mountains; certainly it would be most disastrous. It is the opinion of scientific men resident in the valley, and others who have considered the subject, that the wooded heights surrounding Hot Springs are of vital importance to the comfort and health of its inhabitants, and that the government could confer no greater boon on the town than to secure by reservation the forests which crown the mountains in the vicinity. In this opinion I fully concur, and recommend that authority be given for the withdrawal from sale of these mountain tracts.

Provision should also be made for the reservation of a tract from the unadjudicated lands sufficient for the erection of a hospital for the use of the Army and Navy. The importance of this will sooner or later be recognized, and the United States should retain, while it has the opportunity, the land necessary for the purpose.

Authority should also be given to reserve for the use of the town a public park, the land now occupied as a cemetery. To place this land in the market for sale for business or speculative purposes would be repugnant to the people whose friends and kindred are buried within the enclosure. While the necessity exists for the removal of the cemetery from its present site, the location should be given to the town with the dead it contains, with such restrictions as would secure its use as a public park. A site should also be retained for the erection of a charitable hospital, whenever private or State benevolence provides the funds necessary for the purpose. Hundreds of the afflicted poor yearly resort to these waters as a last resort. Many become paupers on the town, and depend upon private charity for their daily bread. What is now fe-



A hardship will in time become an unbearable evil, unless some organized effort is made to properly care for those whose poverty and sufferings commend them to public sympathy. To provide for this growing necessity a suitable tract should be reserved from sale.

The west line of the permanent reservation forms the east line of Valley street, the principal business throughfare in the town. A substantial stone wall, to retain the filling in of earth necessary to elevate the line of the reservation to the grade adopted by the commissioners, should be built at as early a day as possible. As this wall would be located on the permanent reservation, the expense of its construction should be borne by the United States. A plan has been submitted by the superintendent showing extent and cost of the improvements. It will call for about 72,000 cubic feet of masonry, and would cost about \$15,000. Recognizing the importance of this work, and the propriety of its cost being borne by the United States, I recommend that the money collected for rents of Hot Springs and covered into the Treasury by the late receiver, or so much thereof as may be necessary, be appropriated by Congress for the building of this wall, and for grading the ground within the permanent reservation so as to conform to the proposed grade of Valley street.

The law governing the sale of the Hot Springs property should be so modified as to permit entry upon and purchase, within three months of date of notice, of the lands that no one has an adjudicated right to purchase. As the law now stands these tracts of land cannot be sold until after the expiration of fifteen months, so that the growth of the town, so far as the occupation of new land goes, must be practically suspended during that time.

While there are good reasons for allowing a year's time for payment to those who have an adjudicated right to purchase, I can conceive of none for withholding all the lands from sale during this year of grace, and three months beyond, to cover period of public notice.

The necessity for this modification is so apparent that I recommend it to the early and favorable consideration of Congress.

The reduction of the water rents at the last session of Congress has made it impossible to carry out the projected improvements upon the reservation, the amount received being barely sufficient to pay the salary of and expenses incurred by the superintendent. If the reduction was intended to benefit those who use the waters, it has failed in its purpose, for the charge for bathing remains the same, and the only ones favored are the bath-house keepers. Considering the necessity for a reliable and sufficient revenue to maintain and improve the reservation, I recommend that the old rates be reestablished, so as to secure the funds necessary for the improvement of the reservation and the proper care and supervision of the grounds.

## YELLOWSTONE PARK.

The superintendent of the Yellowstone Park reports the continuance of improvements by the opening of new roads and trails, building of bridges, and the construction of necessary buildings within the park for the accommodation of the force employed and protection of the property of the United States.

It has been suggested that measures should be taken to preserve in this reservation specimens of the notable wild animals common to the country, but fast disappearing from the forests, mountains, and plains of the West. The American bison and buffalo, the elk, moose, and deer, and mountain sheep would thrive in the Yellowstone Park, and I am informed that certain portions of it could, with but little trouble, be protected as to secure their immunity from destruction. The suggestion is a good one, and early direction should be given to carry it into practical effect.

## CAPITOL BUILDING AND GROUNDS.

The architect of the Capitol reports the completion, during the year, of many needed improvements in the Capitol building. He again calls attention to the insecure condition of the old Hall of Representatives, which, from its wooden partitions and roof, is liable to destruction by fire. Prompt measures should be taken to make this portion of the Capitol as nearly fire-proof as possible. The architect calls attention to the means employed for the ventilation of the building, and, for the purpose of securing a supply of purer air, suggests that the strip of government land running from the Botanical Garden to the government reservation at the junction of New Jersey and Virginia avenues be thickly planted with trees so, as to deflect any currents of air, tainted with malaria, which may come from the low lands along the Potomac. He reports the Capitol as in good repair, and suggests the importance of providing additional room for the growing demands of Congress. In his opinion the projection of the center portion of the building at the eastern front would be in accord with architectural beauty of proportion and furnish the improvement required.

As provided by the act of March 3, 1879, a fire-proof extension has been erected to the Government Printing Office.

Attention is called to the lighting of the Capitol by means of electricity. The voltaic battery formerly used in lighting the gas-jets has been superseded by the more economical dynamo-electric machines. Experiments are being conducted with a view to secure a steady electric light for the rotunda and the two chambers of Congress. Advances have been made in this direction, promising complete success, but no change in the method of lighting will be made until a steady electric light is secured.

Satisfactory work has been done upon the Capitol grounds in accord-



with the plans originally adopted. The walks and pavements already laid thus far have proven durable, with a few exceptions; trees and shrubbery have been planted, and the general design of improvements is approaching completion. Since the introduction of the police, good order has been maintained upon the grounds and but little damage has been sustained by depredations.

The architect reports certain repairs upon the court-house of the city of Washington, and calls attention to the insecure condition of the land records of the District of Columbia stored therein. A large part of the upper story of this building is of wooden construction, and liable to fire. Greater security could be obtained at a small cost by removing the land records from the upper to the lower or basement floor, which is substantially fire-proof.

The expenditures on the Capitol Extension account for the year ended June 30, 1879, were \$55,000, the amount of the appropriation.

The appropriation for extension of Government Printing Office was \$43,800; amount expended to July 1, \$14,244.57; leaving an unexpended balance at that time of \$29,555.43.

The expenditures on account of lighting the Capitol and grounds were \$27,000, the amount of the appropriation.

The expenditures on account of the improvement of the Capitol grounds were \$100,000.

#### HOSPITAL FOR THE INSANE.

The report of the Board of Visitors of the Hospital for the Insane contains interesting information pertaining to the condition and management of the institution.

The whole number of patients under treatment during the year was 1,015. Admitted during the year, 222. Males treated, 769; females, 246. The number discharged was, of recoveries, 92; improved, 37; unimproved, 4; died, 63; remaining in hospital June 30, 1879, 819, an excess of 26 over the same time last year.

The patients treated were, from the Army, 491; Navy, 51; civil life, 473. A statement is given of the sanitary history of these who died during the years 1878 and 1879; also in relation to the duration of their mental diseases. A table is given showing the nativity, as far as could be ascertained, of the 4,715 cases treated since the opening of the institution, together with the form of disease of those admitted. A tabular statement is also submitted showing the time of life at which the 4,715 cases became insane.

Carefully prepared tables are also submitted showing the history of the annual admissions since the opening of the hospital, with the discharges and deaths, and the number of patients of each year remaining June 30, 1879; also showing the mean annual mortality, proportion of recoveries, per cent. of the discharges, including deaths, for each year since the opening of the hospital. Attention is called to the crowded

condition of the hospital and to the temporary arrangements made for the accommodation of some of the patients.

During the year buildings have been erected for hospital use; a bakery and laundry. They have been substantially built, and prove of great service to the institution. Ample precautions have been taken to guard against fire by the erection of new hydrants, cisterns and force-pumps, and by providing the necessary hose, ladders, buckets and extinguishers.

The farm and garden belonging to the institution are reported as a source of health and profit. The products of both for the year are valued at \$17,559.20, exclusive of products consumed on the farm, valued at \$5,421.

The receipts for the institution for the year were \$176,809.41; \$150,000 being from the Treasurer of the United States.

The estimates for the next fiscal year are, for support, clothing, treatment of the insane, \$175,000. For general repairs and improvements, \$10,000. For special improvements, reservoirs and filters, additional accommodation for cattle, storage for hay, &c., a kitchen scullery detached from main hospital, a "mortuary building," and greenhouse, \$25,000. For furnishing and fitting the relief building for occupation, \$15,000. Good reasons are given for the appropriations as before, and I recommend them to the favorable consideration of Congress.

The board of visitors refer to the necessity of having separate quarters provided for the female patients, and submit at length their views, and those of the Association of Medical Superintendents of Institutions for the Insane, showing that separate accommodation for the sexes renders their care and treatment more easy and successful. In view of the new in this the recommendation formerly made in favor of the erection of the additional building for the accommodation of female patients. Aside from the advantages which must come from the separation of the sexes, the additional building is needed to provide for the growth of the institution. It is thought that at least three years will be required to complete the proposed edifice, and such appropriation as may be needed to begin the work should be made without delay.

The sanitary condition of the hospital, considering its overcrowded wards, has been excellent, and its general management has been creditable to those having charge of its affairs.

#### INSTITUTION FOR THE DEAF AND DUMB.

The twenty-second annual report of the Columbia Institution for the Deaf and Dumb shows a favorable condition of its affairs. The total number of pupils in the institution at the date of the report, October 28, 1879, was 118, an increase of 48 since July 1, 1878.

The sanitary condition of the institution has been excellent, no de-



having occurred during the year, and no serious cases of sickness reported.

The course of instruction is essentially the same as that of previous years, and the educational progress of the pupils is reported as more gratifying than ever before. Instruction in articulation under Bell's system of visible speech has been satisfactory in all cases.

The receipts of the institution for the year ended June 30, 1879, were \$55,202.56, of which \$51,000 was from direct appropriation by Congress. The expenditures during the same period were \$54,773.69, of which \$29,348.71 was for salaries and wages.

The amount expended for improvements on buildings and grounds was \$5,040.36.

The estimates for the next fiscal year are, for the support of the institution, \$53,500; for erection and fitting up of a gymnasium, and for improvements of the inclosure of the grounds, \$14,388.60.

### FREEDMEN'S HOSPITAL.

The report of the Freedmen's Hospital shows the whole number of patients in the hospital during the year ended June 30, 1879, 904.

Admitted during the year, whites, 190; colored, 452; transients, 31; total, 673. Of this number 136 were white males, 34 white females; colored males, 247; females, 205. During the year 422 were discharged cured; 90 were relieved, and 140 died.

The Colored Orphans' Home and Asylum, containing 115, was furnished with medicines during the year.

Twenty-two hundred and seventy-four patients have been treated outside of the hospital, and about four thousand prescriptions have been put up for their use.

The report contains tables showing the place of nativity of the patients admitted, and the diseases for which they were treated both in the hospital and dispensary. The average cost of each patient, for subsistence, medicines, nursing, and clothing, is given at forty-five cents per day. The surgeon-in-chief concludes his report with the statement: "This is the only general hospital for the reception of all classes of patients within the District. Many of the patients are non-residents, and must be provided for somewhere by the general government when they fall sick in this city. The location of the hospital is central and healthy. Not a case of original malarial disease has been known to occur within the premises since they have been occupied for their present purpose, and only one case of typhoid fever."

### COLUMBIA HOSPITAL FOR WOMEN.

The annual report of this institution shows a gratifying condition of its affairs during the past year. Out of 299 cases treated in the hospital, only one death has occurred during the year.

The sanitary condition of the hospital is reported as satisfactory, the general management of the surgeon in charge is commended by the board of directors and by the advisory board.

The number of patients admitted during the year was 280. In hospital July 1, 1878, 19; total treated, 299; discharged, 273; remaining in hospital July 1, 1879, 27. The number treated in the dispensary connected with hospital, in addition to those admitted, was 41. Attention is called to the insufficiency of the present appropriation, and an additional amount is asked for the next fiscal year.

#### COURT OF CLAIMS.

By act of July 1, 1879, the Secretary of the Interior was authorized and directed to procure suitable and necessary rooms for the accommodation of the Court of Claims. In compliance with this requirement the first floor of the Freedmen's Bank building was selected as offering the most available rooms that could be obtained in a fireproof structure. A lease from October 1, 1879, to the end of the next fiscal year was entered into, and the rooms having been suitably fitted up and furnished, so far as the limited appropriation would permit, are now occupied by the court.

#### TERRITORIES.

##### UTAH.

The governor of Utah reports unusual drought during the past season, and serious effects therefrom on the crops of the Territory. Production in grain, vegetables, fruit, and hay being not more than half the usual amount.

The snows which fall in the mountains and remain there during summer provide the main supply of water necessary for irrigation. During last winter but little snow fell, hence the short supply and deficiency in the crops. Some of the largest streams in the Territory have gone dry; something never before known to the oldest settlers. Even the Great Salt Lake has fallen four or five feet. Stock has suffered severely on the mountain ranges. Despite the season's failure it is believed that the production will be sufficient to supply the wants of the people during the year.

On the subject of grazing lands the governor favors the adoption of some system by which title can be secured to larger tracts than is now allowed by law. Attention is called to the defects in the present mining laws, and suggestions are made as to the amendments necessary. The governor holds that "a man's patent to his mine should be a perfect title to the property covered by his patent, and parties purchasing patented mines should be required to trace titles no further than to the patentees." He also favors the granting of a larger surface area to the confinement of rights within the lines granted. In other words



mining claim should be as definite, so far as its boundaries go, as that of a city lot, and the right to work should be confined within the perpendicular lines of its side and end. Following the dip of mineral veins on the ground of other parties is, in his opinion, the fruitful source of litigation.

Peaceful relations have been maintained with the Indians during the past year. A majority have abandoned their tribal relations, and have taken up small farms in various localities, which are being worked to advantage.

The mining interests of Utah are reported as in a most excellent condition; the introduction of new methods of reducing ore causing larger profits to be realized than were possible in former years.

From the year 1870 to 1878, inclusive, the Utah board of trade reports, as taken from the books of the Utah Central Railroad, the shipment from Salt Lake City of 76,912 tons of lead ore, 109,276 tons of argentiferous lead bullion, and 8,197 tons of lead, worth in the aggregate about \$40,000,000. The value of the ores taken out during the past three years was \$18,558,805.48; of this, \$5,379,446 was lead, the remainder being the precious metals.

The finances are reported in good condition. There is no indebtedness unprovided for. Territorial scrip which four years ago sold for 40 cents on the dollar, to-day is worth 98. Taxation is equitable, and provides for the necessary expenses of the Territory.

During the past year one hundred and fifty miles of additional railroad have been built.

#### WASHINGTON TERRITORY.

The governor of Washington Territory reports satisfactory advancement in the development of the agricultural, manufacturing, mining, and commercial resources of the Territory. Its isolated position and the misconception existing in relation to its climate and productions have tended to prevent its rapid growth.

Situated between the forty-sixth and forty-ninth degrees of north latitude, its climate is generally believed to be cold, and yet the results of careful observation show that the climate of Western Washington is mild, during the winter months the temperature seldom falling below the freezing point. A tabular statement is given, showing the character of the climate throughout the year, based on accurate meteorological observations taken at Port Blakeley, on Puget Sound, in latitude  $47^{\circ} 36'$ . It would appear from this statement that the lowest temperature during a period of twenty-six months was  $25^{\circ}$  above zero. The highest in 1877 was  $88^{\circ}$ ; in 1878,  $94^{\circ}$ ; and in 1879,  $86^{\circ}$ .

The average rainfall is about the same as in the Eastern and Western States. The mildness of the climate is due to the presence of the thermal current, having its origin at the equator, near the one hundred

and thirtieth degree of east longitude, Greenwich, and which northwardly to the Aleutian Islands, where it separates one flowing eastwardly, along the peninsula of Alaska, and then wardly, along the coast of British Columbia, Washington Territory and Oregon.

The prevailing winds during the winter are from the southwest those of the summer from the northwest.

The temperature of Eastern Washington as compared with the western division is slightly higher during the summer and lower during winter.

The average annual temperature is reported as follows: Spring, 50°, summer, 73°, autumn, 53°, winter, 34°.

All the cereals, fruits, and vegetables grown within the temperate zone can be raised in Washington Territory. Eastern Washington is the great wheat field of the Territory, with a capacity for upward of one hundred millions of bushels. The average yield is twenty bushels to the acre.

The exportation of wheat during the present year will be upward of 60,000 tons. Transportation facilities are inadequate to the demand and will so continue until the obstructions are removed at the Cascades, and other points on the Columbia River. To secure removal of these obstructions, liberal appropriations should be made by Congress.

The exports of the Territory have been the cereals and wool, furs, stock, canned salmon, fish, lumber, coal, potatoes, hops, hides, bison, lime, &c.

The export of coal during the year was 190,000 tons; lumber, 150,000 feet; salmon, 160,000 cases of forty-eight cans each, or a total of 7,680,000 cans.

The population of the Territory on the first of May last, was an increase of 7,273 over last year.

The recent transfer of the non-treaty Indians in Eastern Washington to a reservation on the west side of the Okinakane River, has removed the danger of collision between the two races, and will no doubt remove all difficulty in the future.

#### NEW MEXICO.

The report from New Mexico gives interesting and valuable information relative to the resources of that Territory.

The three leading interests are mineral, grazing, and agriculture. Manufacturing is confined almost exclusively to jewelry, of which exquisite work in filigree is produced in Santa Fé, mostly from gold and silver native to the Territory.

But little advancement has been made in agriculture. Its present condition is very primitive, the old Mexican wooden plow still being in preference with the farmers. The little produced is with a view to

local consumption. Wheat and oat fields, as rich as any in Illinois and Minnesota, may be seen six or seven thousand feet above the level of the sea. The grape is easily raised, is free from disease, and affords a good quality of wine.

The area of agricultural production cannot be even approximately given. All irrigable lands, wherever found in the Territory, may be classed as productive or farming land.

The Rio Grande Valley, about four hundred miles in length by an average of five in width, has a soil light, warm, and surpassingly rich. Not more than one-tenth of this land is occupied. Fruits succeed admirably in this locality, although the varieties at present cultivated, except the grape, are of the poorest kind.

The valley of the Pecos River is almost entirely devoted to grazing purposes. Like the valley of the Rio Grande its soil is rich when properly irrigated, and its climate healthy and delightful.

The Mesilla Valley, like the two mentioned, is inviting both for agricultural and grazing purposes. The vast tracts of table lands bordering the valleys are too high for irrigation, but yield grasses of the richest kind for cattle and sheep raising. With such unlimited ranges, stock raising has become a profitable industry, with promise of substantial growth in the future.

In relation to the mineral resources, the governor is of the opinion that New Mexico will compare favorably with her neighbors in the yield of precious metals.

Although the era of prospecting has hardly given place to that of development, enough is already known to warrant the assertion that the territory is well stored with gold, silver, iron, copper, lead, zinc, mica, gypsum, coal, marble, and precious stones.

The coal croppings in Socorro and Colfax Counties, and on the Galisteo River, indicate an inexhaustible supply both of bituminous and anthracite. Cannel coal is also found in the Territory. No attention is being paid to the production of iron, although it is to be found, more or less, in every mountain range.

The same may be said of copper, lead, and mica, while gypsum is so common that it is hardly a merchantable commodity.

Silver and gold are to be found in many localities, and many mines are being worked to advantage. The great drawback at the present time is the want of water.

Mention is made of the numerous hot springs in the Territory.

The waters of many of these have well-determined curative properties, and at Las Vegas elaborate preparations are being made for the cure and entertainment of guests and invalids.

An approximate estimate gives the territory a population of 125,250. The Pueblo or town Indians are estimated at 9,000, and the wild Indians at 14,500.

The school system established in 1871 shows commendable progress,



although much remains yet to be done. No steps have been taken to make available the lands set apart for the schools of the Territory.

The Territory is without benevolent institutions, nor is there a penitentiary within its borders.

The latter is a necessity that should be provided for without delay.

Neglect to erect a suitable institution for the keeping of criminals has been a fruitful source of crime. The governor recommends that Congress take immediate steps to provide a suitable building for the purpose named.

The report concludes with a statement giving the results of the observations relating to the climate of the Territory.

From this it would appear that the central portion has a delightful and healthy climate. The prevailing diseases are rheumatism and typhoid, while consumption is almost unknown.

#### DAKOTA.

Dakota is the largest of the organized Territories, containing 150,000 square miles, or an area nearly equal to Pennsylvania, New York, and all the New England States combined.

The governor reports the present year as one of unexampled prosperity. Although the crops in some of the southeastern counties were partially destroyed by drought and grasshoppers, those of other sections have been excellent.

The products of the Black Hills mines are estimated at \$3,000,000 for the past year. Immigration has been larger than in previous years. In the absence of accurate returns, the population of the Territory can only be approximately given at 160,000.

Railroad facilities are being largely increased, about 400 miles have already been completed, with a promise of at least 500 miles by January 1st.

The educational interests of the Territory are in a satisfactory condition, the schools having increased in number and improved in character. Churches have multiplied, and greater respect is shown for the law than formerly.

The present need of the Territory, and one that Congress should supply at an early day, is a suitable penitentiary for the confinement of criminals.

An institution for the care and education of the deaf and dumb, and the blind is also needed. It is suggested that provision should be made for the organization of at least three companies of militia: one for Southeastern Dakota, one for Northern Dakota, and one for the Black Hills. The governor concludes his report by giving his views on the question of erecting within the present limits of Dakota other territorial governments. He favors the division, and is of the opinion that two or three Territories could be advantageously formed out of the present area.



## IDAHO.

The governor of Idaho reports the year as one of thrift and prosperity. Agriculture and mining have been remunerative, schools have been encouraged, and good health has prevailed. With the advent of railroads and improvements in highways a large immigration may reasonably be expected.

The numerous streams of Idaho afford facilities for irrigation in those sections where rain is infrequent, while the lands of Northern Idaho can be cultivated without resort to artificial means. The governor describes the methods employed for irrigation and the encouraging results which ensue therefrom. He favors government aid in the effort to reclaim lands for cultivation, and the adoption of some system by which large tracts may be secured by individuals willing to expend their capital in building the necessary works for irrigating purposes. The reasons given for the inauguration of a more liberal public policy in the disposal of lands that can be profitably worked only by an expensive system of irrigation are worthy of special consideration.

The timber supply of the Territory is abundant, but a reckless disregard for the public interests has marked its destruction for years past. In addition to the waste of timber by man, the fires which constantly sweep the mountains destroy a greater amount than is taken for consumption by the entire population.

He recommends taking prompt steps to prevent wanton destruction, and thinks this can best be done by transferring the ownership of timbered lands from the government to the people most interested in their use and preservation, under a system which will provide for inspection and valuation, for their sale at entry or auction, at or above minimum prices carefully adjusted.

Since 1863 the gold and silver product of Idaho has amounted to about \$67,000,000. As there is no law requiring miners or public officers to make returns, only approximate estimates can be given. The improved methods employed in reducing the ores and the increasing facilities for transportation will in the future largely augment the annual yield of the precious metals.

The condition of the Indians of Idaho remains substantially as at the date of last year's report. Few depredations have been committed, and these by detached parties not under the control of agencies. The people, consequent upon the disturbances of 1877 and 1878, cherish a bitter feeling against all Indians, and this oftentimes leads to great injustice. In this connection the governor says: "It is not well to disguise the fact that there is among our population a chronic feeling of distrust and hostility towards all Indians, so active in possible results that, in a recent interview with a body of Shoshone and Bannock Indians at the Fort Hall Agency, I made it my duty to warn them to remain upon their reservation and refrain from visiting white settlements unprotected."

The remedy suggested by the governor for existing evils and growing

embarrassments is the early abolition of tribal relations, the giving of lands to the Indians in severalty, with restrictions upon their alienation, the doing away with extensive reservations, and the extension over the Indians of the laws of the United States, with rights and obligations suitable to their condition and future wants.

The governor discusses the theory of Territorial government, the necessity which gave rise to its organization, and the crude national and local legislation which from time to time has been had to provide for its necessities. He says "there is no compacted and consistent system of national law concerning the Territories. Acts have been passed, amendments amended, overlapped, and repealed, and special features introduced to fit special cases, until they lie along the pages of our legislative history in broken fragments like wrecks on the seashore after a storm. Common people, whose interests are in daily jeopardy, cannot understand them; lawyers are paid for disagreeing on their meaning, and judges, when failing from its obscurity to ascertain what the law is, are compelled to decide what it ought to be."

The mining laws especially need revision; and in the governor's opinion Congress should pass a comprehensive and carefully-revised act covering the mining field, clearly defining all rights and remedies, leaving but little scope for local legislation. It is also suggested that Congress interpose for the protection of agricultural interests by preventing the monopoly of the streams of the Territory by private individuals or corporations. The usufruct of natural streams should be guarded by stringent laws, so that the water needed by the many should not be monopolized by the few. The laws relating to the holding of United States courts need revision. The powers and duties of judges, especially in vacation; the mode of enforcing attendance of jurors and witnesses; the manner of impaneling grand and petit juries should be made more effective, and be more clearly defined.

The inadequacy of present compensation to public officials in the Territory, and the insufficient appropriations for contingent expenses are alluded to as sources of much embarrassment.

The finances of the Territory are reported to be in a satisfactory condition, and the debt of the Territory is gradually being reduced.

No reports have as yet been received from the governors of Arizona, Wyoming, and Montana.

#### RECONSTRUCTION OF THE BUILDING.

The restoration of the Interior Department building is progressing as rapidly as the nature of the work of reconstruction will permit. The roof on the north wing is completed, and that of the west wing will soon be finished. The engineer in charge expresses the opinion that both wings will be ready for occupancy before the close of the present fiscal year, and that the cost of the work will not exceed the amount appropriated.

This portion of the building, when completed, will be substan-



fire-proof, will contain about one-third more case-room than was before available, and, both in architectural beauty and in durability of construction, will be a great improvement over the old halls.

Under the capable management of Adolph Cluss, who designed the plan for reconstruction, and who was appointed engineer by the commission having the restoration in charge, the work thus far has been well and economically done.

The attention of Congress is called to the necessity of authorizing the construction of a new and fire-proof roof for the south and east wings, similar to the one designed for the north and west wings. The roof which now covers this portion of the building is little better than a tinder-box, and is liable at any time to be destroyed by fire. The copper roofing is laid upon a covering of boards, and these are fastened to light wooden rafters. The space beneath is traversed by numerous smoke-flues, many of which run horizontally for considerable distances. These imperfect and badly constructed flues are liable at any time to get out of order and endanger the safety of the building. I regard the recovering of this portion of the building with a fire-proof roof as absolutely necessary, and earnestly recommend that an appropriation sufficient for the purpose be made at as early a day as possible.

It is deemed advisable to substitute for the rotten wooden joists and lathing of the ceilings of the first story of the north wing, iron lathing fastened to iron frames; replaster and repaint the rooms and hall damaged by the fire, and to repair the brickwork and plastering of the arched ceiling of the west wing. This work was not included in the original estimates for the reconstruction of the building, and therefore an additional appropriation of \$10,000 is asked for.

An appropriation of \$6,000 is also recommended for the construction of a hydraulic elevator in the north wing, with approved safety apparatus, including a steam-boiler of steel, water-supply, steam-pump pressure, and discharge tanks, all of sufficient size to work, if necessary, two elevators and the necessary machinery.

It is estimated that it will cost \$160,000 to properly fit up the two reconstructed wings with fire-proof model-cases, consisting of wrought-iron frames and doors, plate-glass fronts, and fluted-glass shelves. The necessary cases of hard wood finished in good style would cost about \$90,000, but, as these would supply an amount of combustible material which might at any time endanger the best system of fire-proof construction, their adoption is not deemed advisable. Although the difference in cost between iron and wood cases would appear considerable, I am satisfied that it would be wise economy to have all model-cases in the future constructed of iron, and I therefore recommend that the necessary appropriation be made for this purpose.

I am, sir, very respectfully, your obedient servant,

C. SCHURZ,

*Secretary.*

The PRESIDENT.



## PAPERS

ACCOMPANYING

### REPORT OF THE SECRETARY OF THE INTERIOR

#### REPORT OF THE COMMISSIONER OF INDIAN AFFAIRS

WASHINGTON, D. C., November 1, 1879

SIR: I have the honor to submit herewith the Annual Report of the Indian Bureau for the year 1879.

During the year there has been a steady and manifest progress in civilization which has had no parallel in any previous year in the history of Indian civilization under this government. The spirit of progress cannot be said to have pervaded all tribes alike, or with equal force; but, as a whole, the Indians of the country have taken a long stride in the right direction toward complete civilization and eventual self-support. The most decided advance in civilization has been made by the Ogalala and Brulé Sioux, and their progress during the last year and a half has been simply marvelous. They have manifested an excellent disposition and shown commendable zeal in carrying out the plan of the government for their benefit.

It is no longer a question whether Indians will work. They are steadily asking for opportunities to do so, and the Indians who to-day are willing and anxious to engage in civilized labor are largely in the majority. There is an almost universal call for lands in severalty, and it is remarkable that this request should come from nearly every tribe except the five civilized tribes in the Indian Territory. There is also a growing desire among Indians to live in houses, and more houses have been built, and are now in course of erection, than have been put up during any previous year. The demand for agricultural implements and advances, and for wagons and harness for farming and freighting purposes, is constantly increasing, and an unusual readiness to wear civilized clothing is also manifest.

The loss of the buffalo, which is looked upon by Indians as disaster, has really been to them a blessing in disguise. They now see clearly that they must get their living out of the soil by their own labor, and a few years' perseverance in the beneficial policy now pursued will render three-fourths of our Indians self-supporting. Already very many tribes have a surplus of products for sale.

The only exception to the general improvement for the year is shown in the bad conduct of the White River Utes and the marauders in northern Mexico, which will be referred to hereafter.

The following table shows the substantial results of Indian labor during the year, as well as the increase over the amount given in last year's report. But for the severe drought which has prevailed in the Indian Territory and among the Navajos during the past season the increase in crops would have been much larger, especially in the corn crop, which is considerably below that of last year.



*Indians exclusive of five civilized tribes.*

	1879.	1878.
Number of acres broken by Indians .....	24,270	22,319
Number of acres broken by government .....	2,861	2,072
Number of acres cultivated by Indians .....	157,056	128,018
Number of bushels wheat raised by Indians .....	328,637	266,100
Number of bushels corn raised by Indians .....	643,286	671,363
Number of bushels oats and barley raised by Indians .....	189,054	172,067
Number of bushels vegetables raised by Indians .....	390,698	315,585
Number tons hay cut by Indians .....	48,333	36,942
Number of Indian apprentices .....	185	104
<i>Five civilized tribes.</i>		
Number of acres cultivated .....	273,000	245,000
Number of bushels wheat raised .....	563,400	494,400
Number of bushels corn raised .....	2,015,000	2,642,000
Number of bushels oats and barley raised .....	200,000	201,000
Number of bushels vegetables raised .....	336,700	320,000
Number tons hay cut .....	176,500	116,500

## A PATENT FOR LAND.

The more intelligent and best disposed Indians are now earnestly asking for a title in severalty to their lands as a preliminary to supporting themselves from the products of the soil. The number of persons who can be employed in stock-raising is small, since comparatively little labor is required and a few men can herd and take care of a thousand head of cattle; but the cultivation of the soil will give employment to the whole Indian race. The only sure way to make Indians tillers of the soil, under the best conditions to promote their welfare, is to give each head of a family one hundred and sixty acres of land, and to each unmarried adult eighty acres, and to issue patents for the same, making the allotments inalienable and free from taxation for twenty-five years.

A bill to carry out this beneficial object was submitted to the extra session of the Forty-sixth Congress [H. R. 354]. It was carefully prepared by the department to meet all the wants of the situation, and was similar to a bill which had been introduced into the Forty-fifth Congress and had been favorably reported on by committees in both Houses, but which had failed to receive action. The speedy passage of such a bill would be a greater boon to Indian civilization than any other that could be bestowed. As will be seen throughout this report, the willingness of the Indian to work has already been demonstrated. Give him the land and the opportunity, and the result is a foregone conclusion. But so long as he has no individual title to the land he is asked to cultivate, the fear that it will some day be taken from him will operate as a serious hindrance to his progress. With the Indian as well as the white man industry and thrift have their root in ownership of the soil. The patenting of lands in severalty creates separate and individual interests, which are necessary in order to teach an Indian the benefits of labor and to induce him to follow civilized pursuits.

In this connection I desire to call attention to House bill 352, 46th Congress, 1st session, which confirms certain entries of lands made by Chippewa Indians in Michigan, and also to House bill 355, introduced during the same session, amending the deficiency act of March 3, 1875. This latter bill extends the limitation placed upon the conveyance of lands taken by Indians under the homestead law to twenty-five years from date of patent instead of five years. It also includes other limitations embraced in House bill 354 referred to above. Under the provis-

ions of this act a large number of Indians in Oregon, Washington Territory, and other portions of the Northwest, who are not on reservations could be readily and advantageously settled.

#### PENAL SETTLEMENTS.

In former years when Indians committed serious crimes it was customary to inflict punishment therefor by sending them to Saint Augustine, Fla., to be kept in close confinement at Fort Marion. They were then deprived of their liberty until they were believed to be in a fit frame of mind to be permitted to go back to their tribes, with a reasonable prospect of their remaining quiet in the future. Of late years the military who have acted as custodians of these captive Indians, have objected to keeping them, on account of the expense of feeding them from the Army appropriation, and for the last two years it has been a difficult matter to cause Indian criminals to be held in custody beyond a very brief period of time, although the Army appropriation bill makes special provision for the support of Indian prisoners.

A penal settlement for the confinement and reformation of the most turbulent and troublesome individuals among the various Indian tribes is a pressing want, and immediate action should be taken for the establishment of such a settlement. For the worst class of refractory Indians one settlement should be in Florida, which is far enough away from Indian reservations to make any attempt at escape hopeless. Another settlement should be established in the Northwest, at some point where a considerable quantity of arable land can be found, so that Indians who are thus restricted in their liberty may be taught to work for their support.

It is impossible to properly govern a barbarous people like our wild Indians without being able to inflict some punishment for wrong-doing that shall be a real punishment to the offender. At the present time the military are called upon to suppress insurrections, and to chastise by the penalties and losses of war, those who rebel against the government. These are temporary evils to the Indians, and unless the punishment inflicted is unusually severe the lesson is soon forgotten. Moreover, in such cases chastisement often falls heavily on innocent parties instead of the guilty. If the Indian Office had a penal settlement where the most turbulent individuals among the tribes could be placed, they could be taken from their homes to the place of punishment without disturbing the general peace, and the prompt infliction of a punishment of this kind would tend to curb the evil-disposed and prevent them from stirring up outbreaks. In fact there is nothing the Indian would dread more than to be deprived of his liberty.

Such a settlement should be guarded by a sufficient force to exercise perfect discipline, and such prisoners should be taught trades as well as agriculture. A school of correction of this kind would be of inestimable value to the Indian service, and it would exercise a reformatory influence that could not be obtained by simple confinement. Useful occupation provided for the captives, with some encouragement to industry would in most cases enable them to be returned to their homes in an advanced condition of civilization.

#### SALE OF ARMS TO INDIANS.

During the last two years the sale of arms and ammunition by Indian traders has been strictly forbidden and no case is known where the prohibition has been violated. Such vigilance has been exercised

by the Indian Office in this matter that trader's licenses have been revoked whenever there was the slightest suspicion of the existence of this contraband trade. Nevertheless, outside of Indian reservations, men are everywhere found driving a thrifty business in selling breech-loading arms and fixed ammunition to non-civilized Indians, and the sales thus made are limited in amount only by the ability of the Indians to purchase.

Previous to the late Ute outbreak the Indians were amply supplied with Winchester and Spencer rifles and fixed ammunition obtained from traders outside of their reservation. Game was abundant on or near their reserve, and for some time the Utes had been making sales of peltries to a large amount, and were thus enabled to provide themselves with such arms and ammunition as they desired. Their largely increased purchases of arms just before the outbreak might have served as a notice to these unscrupulous traders that an outbreak was impending in which the lives of innocent people would be sacrificed. There is no offense against the commonwealth showing greater moral turpitude than the crime of those persons who recklessly place in the hands of savages all the improved patterns of arms, which they know will be used to destroy the lives of innocent white citizens.

There is no statute against this crime, and the only semblance of prohibition is contained in the following joint resolution and proclamation, viz:

EXECUTIVE MANSION,  
November 23, 1876.

A joint resolution adopted by Congress August 5, 1876, declares that—

Whereas it is ascertained that the hostile Indians of the Northwest are largely equipped with arms which require special metallic cartridges, and that such special ammunition is in large part supplied to such hostile Indians, directly or indirectly, through traders and others in the Indian country: Therefore, *Resolved by the Senate and House of Representatives in Congress assembled*, That the President of the United States is hereby authorized and requested to take such measures as, in his judgment, may be necessary to prevent such metallic ammunition being conveyed to such hostile Indians, and is further authorized to declare the same contraband of war in such district of country as he may designate during the continuance of hostilities.

To carry into effect the above-cited resolution, the sale of fixed ammunition or metallic cartridges by any trader or other person in any district of the Indian country occupied by hostile Indians, or over which they roam, is hereby prohibited; and all such ammunition or cartridges introduced into said country by traders or other persons, and that are liable in any way or manner, directly or indirectly, to be received by such hostile Indians, shall be deemed contraband of war, seized by any military officer and confiscated; and the district of country to which this prohibition shall apply during the continuance of hostilities is hereby designated as that which embraces all Indian country, or country occupied by Indians, or subject to their visits, lying within the Territories of Montana, Dakota, and Wyoming, and the States of Nebraska and Colorado.

U. S. GRANT.

The foregoing resolution is, at best, only a specimen of very loose legislation. In lieu thereof a well-considered penal statute should have been enacted forbidding such sales not only in the Northwest, but wherever there are non-civilized Indians, whether on or off reservations. The danger always is that such trading will be carried on just outside reservation limits, where all sorts of contraband sales are effected and where Indian agents are powerless.

Again, the joint resolution prohibits the sale of "metallic ammunition" only, and not of arms as well. The right of purchasing arms *ad libitum* is the evil complained of. Without arms, ammunition would be of no use, and the latter can be traded in to any extent with little danger of detection, since it can be easily carried concealed about the person. The sale of arms, on the other hand, could be readily detected and exposed; and it is against such sales that legislation should especially be directed. It would almost seem as if the very men engaged in this murderous traffic



had framed the above resolution to protect their guild and to enable them to ply their trade with impunity. When it is considered how many lives have been lost during the time which has elapsed since the passage of this resolution (which virtually permits this unhallowed traffic in the implements of death), it is strange that no adequate legislation has been had for the protection of human life. A law by Congress prohibiting under severe penalty the sale of both fire-arms and fixed ammunition to non-civilized Indians, is the only common-sense and practical method of putting an end to this dangerous traffic.

#### INDIAN EDUCATION.

The work of promoting Indian education is the most agreeable part of the labor performed by the Indian Bureau. Indian children are bright and teachable as average white children of the same ages; and while the progress in the work of civilizing adult Indians who have had no educational advantages is a slow process at best, the progress of the youths trained in our schools is of the most hopeful character. During the current year the capacity of our school edifices has been largely increased, and some additional schools have been opened. The following tables will show the increase of school facilities during the year:

	1879.	1880.
Number of children, exclusive of the five civilized tribes, who can be accommodated in boarding-schools.....	3,461	2,522
Number of children who can be accommodated in day schools.....	5,970	5,522
Number of boarding-schools .....	52	52
Number of day schools .....	107	107
Number of children attending school one or more months during the year, male, 3,965, female, 3,228 .....	7,193	6,193
Number of children among the five civilized tribes attending school during the year.....	6,250	5,522

In the last report of the Indian Office an account was given of the progress of Indian education initiated at Hampton, Va. The progress of the children sent to Hampton last year has been very satisfactory. They have learned as readily as could have been expected, and the success attending the experiment has led to the establishment of a training school of the same kind at Carlisle Barracks, Carlisle, Pa., under the immediate charge of Lieut. R. H. Pratt, U. S. A. He has now in full operation a school consisting of 158 Indian children of both sexes, three-fourths of whom are boys. These children have been taken in large numbers from the Sioux at Rosebud, Pine Ridge and other agencies on the Missouri River, and from all the tribes in the Indian Territory except the civilized Indians.

Carlisle is pleasantly situated in the Cumberland Valley. The soil is fertile and the climate healthy, and not at all subject to malaria. On the grounds surrounding the barracks a large amount of gardening can be done advantageously. The buildings are comparatively new, of brick, in a good state of preservation, and furnish pleasant and commodious quarters for those already there, with a capacity to provide accommodations for at least four hundred more children. It is hoped that Congress will make further provision by which the number of pupils at this school may be largely increased.

These children have been very carefully selected, having undergone the same sort of examination by a surgeon to which apprentices for the Navy are subjected, and only healthy ones have been accepted. The pupils will not only be taught the ordinary branches of an English education, but will also be instructed in all the useful arts essential in providing for the every-day wants of man. The civilizing influence of the



schools established at the East is very much greater than that of like schools in the Indian country. All the children are expected to write weekly to their homes, and the interest of the parents in the progress and welfare of the children under the care of the government is at least equal to the interest that white people take in their children.

In addition to the scholars at the Carlisle training school, the number during the coming year at Hampton will be increased to about sixty-five. Benevolent persons all over the country are taking a deep interest in both of these schools, and are contributing money to promote the improvement of the pupils, by furnishing articles that cannot be supplied and paid for under government regulations.

From the statements herein made it will be seen that the work of education among Indians has been largely increased, and the facilities now enjoyed will tend very materially to promote the work of Indian civilization. The interest of the Indian chiefs and ruling men in these educational movements is very great. They have already expressed a desire to send school committees from their tribes to see and report upon the progress and treatment of their children in the government schools, and permission to come east for that purpose will be granted to a limited number. The older Indians, and those experienced in the affairs of the tribes, feel keenly the want of education, and as a rule have favored all endeavors to educate their children, and it is a rare thing to find an Indian so benighted as not to desire to have his children taught to read and write in the English language.

Arrangements are now in progress for opening a school similar to the Carlisle school at Forest Grove, Oregon, for the education of Indian children on the Pacific coast.

#### INDIAN FREIGHTING.

In the month of July, 1878, it was proposed to the Sioux chiefs Spotted Tail and Red Cloud, in a council held with them at their old agencies in Dakota, that they should begin the work of their own civilization by hauling their annuity goods and supplies from the Missouri River to the new locations to which they were about to remove, distant respectively 90 and 183 miles westward from the river. The Indians promised that, whenever the government should furnish them with the means of transportation, they would willingly embark in the enterprise. Owing to the impending removal of the Indians and the lateness of the season, it was decided, after due deliberation, to defer putting the plan into execution until after the removal should have been accomplished and sufficient supplies should have been transported to the new locations to carry the Indians through the first winter. The department did not wish to incur the risk of making a trial of what was looked upon as an experiment, when any failure might deprive the Indians of sufficient food and shelter to enable them to withstand the rigors of a Dakota winter.

As related in my last report, a serious combination was made by contractors to take advantage of what was supposed to be the necessities of the government in the hope of thereby extorting exorbitant rates for the carrying of supplies from the Missouri to the two agencies. After advertising twice successively for bids for transportation without obtaining reasonable proposals, it was determined to purchase four hundred and twelve wagons and six hundred sets of double harness, and to hire the Indians with their four-pony teams to remove nearly 4,000,000 pounds of freight an average distance of nearly 150 miles. Even the boldest

and most progressive agents pronounced the undertaking a novel and doubtful experiment and others declared it to be impossible, expressing the opinion that Indian ponies were too weak and unreliable to depend upon for business of such serious importance. To add to the difficulties of the situation malicious white men burned the grass between the agency and the Missouri River for a space 40 by 60 miles in extent.

Under difficulties like these the task of teaching wild Indians to supply with their unbroken ponies began October 11, 1878, and January 1, 1879, their ability to perform the work had been successfully demonstrated, and 13,000 Indians were comfortably fed and clothed on supplies and annuity goods hauled by themselves without waste.

In past years, when wagon transportation was performed by white tractors, the loss and waste were very considerable. Employed teamsters lived on the flour, sugar, bacon, and coffee transported by the Indians, however, invariably carry their freight through. They have become expert drivers of four-pony teams, and now mount them with the skill of an experienced stage-driver.

The result of the experiment with the Sioux Indians has led to the purchase of enough transportation material to enable all our Indians except the tribes in Colorado, New Mexico and Arizona, to haul their own supplies. One thousand three hundred and sixty-nine wagons and two thousand five hundred sets of double harness are now employed in the service with excellent results in all cases.

The influence of this industry upon the tribes in which it has been introduced has been marvelous. In the past all drudgery and menial labor was the real work devolved upon the Indian women, while they laughed and ridiculed any man who was disposed to labor. Now, however, the women are glad to have the men do the hauling, and even other men and go so far as to ride in the wagons with their husbands on the trips between the agencies and the base of supplies. The progress of this industry compels the men to wear citizens' clothing, and a particular rapid advance in civilization has been made. Another advantage, and perhaps the greatest one, is the opportunity thus afforded the Indians to earn money honestly, and by constant application, in considerable amounts. Hauling is far more profitable than hunting even when game was abundant. Then the traders, in the purchase of goods, for which they made payment in tokens, took the lion's share of all the Indians could earn; now their wages are paid in cash, and the Indians are rapidly learning to make a good use of their money. It is not expended for necessities and comforts is given to the women to keep for future wants.

It is now the settled policy of the government to give all wagon transportation to Indians, and to make them useful in every capacity in which Indian labor can be employed.

#### STOCK CATTLE.

For several years past the experiment of furnishing Indians with cattle for stock-raising has been made from time to time, and it has been found that the Indians have almost invariably herded their cattle and have raised young stock in considerable numbers. During the present year, as the following figures will show, very much more has been done in the distribution of stock among the Indians than at any time heretofore. The government has contracted for 11,311 head of



attle, which have been delivered in part; the remainder of the deliveries will be made as soon as spring is fairly opened. These cattle are distributed as follows: 1,100 to the San Carlos Agency, 100 to Siletz, 222 to Pine Ridge, 1,632 to Rosebud, 900 to Cheyenne and Arapaho, 9 to Kiowa, Comanche, and Wichita; 817 to Osage, 400 to Pawnee, 9 to the Shoshone and Bannack; 100 each to the Sac and Fox, and Paw Agency; 200 each to the Western Shoshone, Flathead, and Fort Hall Agencies; 300 each to Crow Creek, and Ponca; and 500 each to Yankton, Standing Rock, Lower Brulé, and Blackfeet Agencies. These cattle have been and will be distributed only to such Indians as, in the opinion of the respective agents, will take the best care of them. Properly cared for, the increase of this stock, in four years, will, with the original herd, amount to nearly 50,000 head, from which it will be seen that the success of the Indians in stock-raising and their ability to profit by it can be demonstrated in a very brief time. These advantages, taken in connection with the issue of agricultural implements and wagons, a number to correspond with the issue of cattle, will require but one more act on the part of the government to complete the conditions necessary for Indian self-support. The only thing needful is to provide them with an absolute title to lands in severalty, covered by a patent from the government, with protection against taxation and alienation.

#### GRANARIES AND ROOT HOUSES.

Indians in their natural state are exceedingly improvident, and while for one year, if left to themselves, they might procure seed and raise a large crop, the probability is that before the next planting season their supply of seed would be entirely exhausted. It is necessary, therefore, to exercise some forethought in their behalf, and during the current year the office has directed agents to construct granaries and root houses, and to call upon each Indian who has been engaged in farming to deliver at the agency a sufficient amount of seed for the next crop. In return, the agent gives a receipt for its safe-keeping. This of course renders it necessary for the agent to have a place of storage where the seeds or roots will be safe from destruction or frost.

It is not unusual for Indian traders to give Indians credit to an amount not only sufficient to absorb their whole year's crop, but also to demand, in payment for debt, even the amount left over for seed. For this reason traders have been enjoined not to give Indians credit, but to let them pay in cash and products as far as they may go.

These granaries and root houses, which are necessary to make sure that the Indians do not part with their seed to satisfy passing wants, have been completed or are in course of construction for the following agencies: Cheyenne River, Lower Brulé, Crow Creek, Yankton, Fort Berthold, Sisseton, Blackfeet, Crow, Flathead, Shoshone, Yakama, Kalapallip, Neah Bay, S'Kokomish, Siletz, Umatilla, Round Valley, Cheyenne and Arapaho, Pawnee, Osage, Sac and Fox, Santee, Omaha, Winnebago, Great Nemaha, and White Earth.

#### INDIAN POLICE.

It is about two years since the general establishment of an Indian police force, which has proved to be exceedingly beneficial to the service. The policemen have shown the utmost fidelity to the government, and, when necessary, have arrested even friends and relatives with absolute impartiality. At the Pine Ridge Agency, on the 8th of September last, a

runner was dispatched from the camp of Young-Man-A-fraid-of-his-horse to notify the agent of the escape during the night of eleven Cheyennes who had taken with them twenty-two head of horses and ponies belonging to the Sioux. Police Captain Sword, with nine of his men, was in pursuit, and the next day overtook the Cheyennes—who had started at the start of the police—on Osage Creek west of the Black Hills about 125 miles distant from the agency. Sword and his party immediately surrounded the fugitives and demanded their surrender. Spotted Wolf, the leader of the runaways, refused, and threw off his bow, which among Indians signifies a challenge to mortal combat. The police immediately opened fire on the party, killing Spotted Wolf. The remainder then surrendered, and after a two-days march were brought back to the agency. Many other equally noteworthy instances of fidelity have occurred, and as a whole, where agents have entered into the spirit of the system, the results have been of the best possible character.

There is but one drawback, which should be removed by Congress. The pay of policemen which is fixed by law at \$5 per month should be increased to \$15. The men enlisted in the police service are the heads of families, and \$5 per month is the merest pittance. Those engaged in other avocations at the various agencies are paid \$10 per month, teamsters, with their ponies, often earn \$30 per month. Especially at the larger agencies, where there is considerable police work to be done, the payment of the police should be increased as above proposed. At present considerable dissatisfaction is felt among the Indians on account of the scanty pay, and agents report great difficulty in keeping up their quota of suitable men. This should not be the case, as our police are necessary for the maintenance of order and good government at several agencies, and is of the highest importance in teaching the Indians the habits of civilized life and eventual self-government.

#### MARRIAGES.

In my last annual report I recommended the enactment of a law to prevent polygamy, which prevails in almost every Indian tribe, and to provide for legal marriages among Indians. I can do no better than repeat that recommendation here:

An act of Congress should provide wholesome and proper marriage laws for the Indian tribes. The agent should be required to marry all the Indians cohabiting together upon the various reservations, giving them a certificate of such marriage; and at the beginning of the next year no Indian should be permitted to marry more than one wife. White men cohabiting with Indian women should be compelled to marry them or to quit the reservation.

#### THE PONCAS.

As stated in my last annual report the Poncas were finally settled on both sides of the Salt Fork near its junction with the Arkansas River. The location is healthy and the soil fertile. There is everything in the surroundings of the agency to please the eye, and it is universally regarded as the best location for an Indian agency to be found anywhere in the country.

The Poncas are now doing well. Many houses have already been built, and by the 1st of January next the agent expects to have the whole tribe comfortably supplied with houses. They have been furnished with wagons and harness for freighting and farm purposes, and have



their own supplies from Wichita, Kansas. They have been supplied with horses and cattle for stock-raising, and also with agricultural implements sufficient for all the members of their tribe. A steam sawmill and a shingle-machine have been placed at the agency, and have been running continuously since March last. A school-house has been built and a school has been in operation for a considerable portion of the year. In brief, every thing possible has been done to promote their comfort and civilization.

As reported heretofore, these Indians suffered greatly in health by their removal to the Indian Territory, but they have now become acclimated and the health of the tribe has greatly improved.

By the treaty of March 12, 1858 (12 Stat., 997), the Ponca tribe of Indians ceded to the United States all the lands then owned or claimed by them except a tract in what is now the Territory of Dakota, which was reserved in said treaty as their future home. In consideration of such session the United States stipulated, among other things, "To protect the Poncas in the possession of the tract of land reserved for their future homes and their persons and property therein during good behavior on their part." By the treaty of March 10, 1865 (14 Stat., 675), certain cessions and exchanges were made by which the area of the Ponca reservation was reduced to 96,000 acres, to which diminished reservation the pledge of protection in the former treaty remained fully applicable, and was never forfeited on the part of said Indians.

The following bill was presented by the department to Congress on the 3d of February 1879:

**A BILL** For the relief of the Ponca tribe of Indians in the Indian Territory.

Whereas, by the treaty of March 12, 1858, the Ponca Indians ceded to the United States all the land then owned or claimed by them, except a tract in the Territory of Dakota, bounded as follows, viz: "Beginning at a point on the Niobrara River and running due north so as to intersect the Ponca River 25 miles from its mouth; thence, from said point of intersection up and along the Ponca River twenty—miles; thence due south to the Niobrara River, and thence down and along said river to the place of beginning"; and in possession of which the United States agreed to protect said tribe; and,

Whereas, by the treaty of March 10, 1865, certain changes were made in the boundaries of the Ponca Reservation, as defined in the treaty of March 12, 1858, whereby their reservation was reduced to 96,000 acres of land; and,

Whereas, by the second article of the treaty of April 29, 1868, with the Sioux nation of Indians, the lands owned and then occupied by the said Poncas, under the provisions hereinbefore set forth, and on which they had valuable improvements in houses and cultivated lands, were without their consent ceded and conveyed by the United States to said nation of Indians; and,

Whereas provision was made in the act making appropriations for the current and contingent expenses of the Indian Department for the fiscal year ending June 30, 1877, for the removal of the Ponca Indians to the Indian Territory, which said removal has since been effected; and

Whereas said Ponca Indians at the time of their removal were obliged to leave all of their improvements and other valuable property, consisting of agricultural implements, etc., on their said reservation in Dakota, and for which they have received no compensation; and,

Whereas said Ponca Indians are now located temporarily on certain lands, which they desire to retain, within the territory west of the 96<sup>th</sup> ceded by the Cherokee Nation to the United States by the treaty of July 19, 1866, for the purpose of settling other Indians thereon, but which lands they have no money to purchase as provided in said treaty: Therefore,

*Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled,* That the Secretary of the Interior be, and he is hereby, authorized and directed to permanently locate the said Ponca Indians on the tract of land now occupied by them, embracing in the aggregate 101,894 acres, and to purchase the same for their use from the Cherokee Nation; said purchase to be made in accordance with the provisions of the Cherokee treaty of July 19, 1876.

SEC. 2. That the sum of \$140,000 be, and the same is hereby, appropriated, any moneys now in the Treasury of the United States not otherwise appropriated be disposed of for the benefit of said Ponca Indians as follows, viz, \$82,000, or so thereof as may be necessary, shall be expended by the Secretary of the Interior for the lands authorized herein to be purchased for the use of the tribe of Indians, and the balance of said \$140,000 remaining after the purchase of lands shall be invested in the four per cent. bonds of the United States and be a permanent investment for said tribe, the interest thereon to be expended annually for their benefit in such manner as the Secretary of the Interior may direct.

SEC. 3. That the amount appropriated herein shall be in full of all claims of the Ponca tribe of Indians against the United States for the lands and property heretofore owned by them in Dakota Territory.

By the provisions of the above bill it will be seen that everything has been done for the Poncas, so far as this department can act. The lands were ceded to the Sioux by act of Congress, and proper repairs can only be made by the same authority.

#### CHIEF MOSES AND HIS PEOPLE.

During the summer of 1878 the settlers in Washington Territory were painfully excited by the restless condition of the Indians in their neighborhood owing to the outbreak of the Snakes and Bannacks in the adjacent Territory of Idaho, and organized measures for self-protection and roving bands were considered necessary. Chief Moses and his people, who at that time were not on any reservation, were suspected by the settlers of being in sympathy with the hostile Indians, and also of having been accomplices in the murder of a man and his wife, named Perkins, who had been killed by a roving band of Columbia River Indians, and the influence of the notorious "dreamer" Smohallie. In the fall of 1878 Agent Wilbur was directed to use his best endeavors to induce Chief Moses and his band to go upon the Yakama Reservation. He accordingly sent for Moses, who, on the plea that a separate reservation was to be assigned him, declined to go to Yakama until the decision of the Commissioner in the matter could be had. He denied all personal knowledge of the Perkins murder, and offered to furnish guides to assist in the arrest of the guilty parties, who were then located about 40 miles from his camp.

A party of fifteen agency Indians and thirty white volunteers from Yakama City was formed, and it was arranged that Moses and his people should have one day's start of the party in order to make arrangements for crossing the Columbia River. On arriving with his men at the appointed place he found that the volunteers had proceeded to a point twelve miles below. This fact, coupled with reports which had reached him in the mean time that the whites had planned to waylay and kill him on the way home, and that the police and volunteers intended to arrest him and confine him in jail at Yakama, aroused his suspicions, and he failed to furnish the guides as agreed, and confronted the volunteer party in an apparently hostile attitude with about sixty armed men. After a parley, which resulted in both sides withdrawing without collision, Moses returned to his camp, but three days later started nine of his men (as he states) to join the party in the capture of the murderers. Before reaching them he encamped for the night, and the volunteers who were in that vicinity, mistaking their camp fires for those of the murderers, surrounded the camp and took Moses and his nine men as prisoners. All were disarmed; five went after the murderers, and the arrested one, the other having killed himself to avoid arrest, and the remaining four men were taken to Yakama City and confined in jail without any formal examination. A week later Agent V

persuaded the citizens to allow him to take them in charge, and, under guard to prevent the excited settlers from killing him, Moses and his men were taken to the agency, where they remained for three months despite the repeated and strenuous efforts which were made by the citizens to take Moses out of the agent's custody and return him to jail.

On the 12th of February last the department ordered Moses and his party to Washington for a conference. This order was communicated to the Yakama authorities, and upon their agreement not to disturb or arrest him he was allowed to return to his people and make the necessary arrangements for his journey to Washington. At the expiration of ten days he was sent for, and returned word that he would meet the agent at the Yakama Ferry in four days. Upon arrival at the ferry, the agent found the county sheriff with a posse guarding every crossing in the river for twenty miles or more, with a sworn determination to take Moses dead or alive. Finding that he could do nothing, the agent returned to Yakama City, and the next morning the chief was brought in by the sheriff. Court was called, and Moses was arraigned as accessory to the murder of the Perkins family. The prosecution, on the plea that they were not ready, asked adjournments, first for twenty-four hours and then for eight days. It becoming apparent that delay was asked solely for the purpose of preventing Moses from proceeding to Washington and of keeping him in jail until the October term of court, the agent proposed to waive preliminary hearing and enter bail for his due appearance at court. His proposition was accepted, and Moses came to Washington.

Several conferences were held with him, which resulted in the issuance of an executive order dated the 19th of April, 1879, setting apart for himself and his people a reservation, called the Columbia reservation, which adjoins the Colville Reserve in Washington Territory. The delegation returned to Vancouver with a special request to the governor of the Territory and the general commanding the department to see that they were forwarded to their new home without arrest or further interference by the whites. Moses has since expressed himself as being perfectly satisfied with the location provided.

It was deemed expedient to accede to the earnest desire of Moses to have a new reservation set apart for his occupancy, because of the hardship and unjust treatment to which he had been subjected and in acknowledgment of his valuable services in controlling the disaffected and in preserving the peace during the excitement occasioned by the hostilities of the Bannocks. By this arrangement an expensive war was undoubtedly avoided.

The Indians concerned in the Perkins murder were tried at the last (October) term of the circuit court of Yakama County, Washington Territory, and three of them were condemned to death. The charge against Chief Moses was pressed for days and some sixty or more witnesses were examined; but no bill against him could be found. He was thereupon discharged and his bondsmen released.

#### THE REMNANT OF DULL KNIFE'S BAND.

In the last annual report of this bureau mention was made of the desertion of a party of about three hundred Northern Cheyennes, under Dull Knife, from the Cheyenne and Arapaho Reservation in the Indian Territory, in September, 1878, and of the fact that on their way through Kansas they murdered more than forty men, women, and children, and committed other outrages. At the date of said report the portion of



those Cheyennes who had surrendered to the military were held as prisoners at Camp Robinson, Nebr., and the War Department had been requested to send them to Fort Wallace, Kans., in order that the civil authorities of that State might identify and properly punish the parties guilty of crimes committed in the raid through Kansas.

The headmen of the Cheyennes then in confinement at Fort Robinson were notified by the military on the 3d of January that the authorities in Washington had decided to send them back south. On the next day, after consultation with the rest of the captives, Wild Hog, as spokesman, gave an unequivocal negative to the proposition of declaring their intention to die before complying with the order. The prisoners numbered at this time forty-nine men, fifty-one women and forty-eight children. It was then attempted to starve and freeze the captives into submission, and for five days they were deprived of food and fuel, and for three days of water also. This experiment proved effectual, on the 9th of January it was decided to arrest Wild Hog, the leader of the opposition. He was with difficulty induced to come out of the prison, and after a struggle, in which a soldier was slain, he was ironed. Upon this the Indians in the prison barricaded the doors, covered the windows with cloth to conceal their movements, raised up the floor, and constructed rifle-pits to command all the windows.

As early as November 1, 1878, Red Cloud had requested that the knives be taken from these prisoners to prevent them from taking their own lives in case they should be ordered South. This, however, was not to have been done, neither had they been wholly disarmed, for they were the possessors of at least fifteen guns (in addition to the weapons obtained from the dead sentinels) and some revolvers, and were well supplied with knives.

About 10 o'clock on the night of January 9, the Indians commenced firing upon the sentinels, killing two and wounding a corporal in the guard-room, and made their escape through the windows, the soldiers being driven in front of the men in their flight. They were pursued by the troops, and most of their number were eventually killed. The survivors were taken to Kansas for the identification of those who had been accused of murder and outrage, and Wild Hog and six others were indicted in the courts of that State. When the case was called, *prosequi* was entered, thereby dismissing the case; the prisoners were set at liberty, and they accompanied their agent to the Indian Territory.

#### LITTLE CHIEF'S BAND OF CHEYENNES.

Little Chief and his band of Cheyennes, numbering about 200, left the Indian Barracks on their way to the Indian Territory October 20, 1878, and arrived at the Cheyenne and Arapaho Agency on the 9th of December last. It seems that Little Chief and his band were traveling peacefully southward at the same time that Dull Knife and his band were raiding in the opposite direction. Fortunately the two bands did not meet and strike hands.

In March last information was received that these Indians were growing dissatisfied and were about to break out on the war-path. As matters seemed serious enough to warrant it, Little Chief and five others were permitted to come to Washington in May last and present their case. They stated that they had been informed by military officers at Fort Keogh that if on arrival at the Indian Territory they were not satisfied with the country they might return to the north. Little Chief was earnest in the presentation of his case, and was sustained by the members of the delegation. For some time it appeared doubtful whether



they would voluntarily consent to go back to the Indian Territory, but by perseveringly following their arguments and making plain the requirements of the law in their case, their full consent was finally obtained, and they went back to their homes cheerfully and with the evident intention of remaining there quietly and peacefully; which they have so far done.

#### THE OUTBREAK OF THE UTES.

By the treaty of March 2, 1868, two agencies were established on the Ute Reservation in Colorado, the Los Pinos Agency in the south for the ~~Pabequache~~ and Muache bands, and the White River Agency in the north for the Yampa, Grand River, and Uintah bands. Abundance of game on and near the reservation with which to supplement the half rations provided under treaty enabled the Utes to postpone indefinitely the time when they should be compelled to adopt civilized habits and means of subsistence. Owing to their proverbial friendliness to the whites and loyalty to the government, their frequent excursions outside the reservation gave comparatively little uneasiness, and was often encouraged by those who wished to gain possession of the large quantities of peltries which the Utes annually secured. By this means the Indians had no difficulty in obtaining in abundance the arms, ammunition, and whiskey which were denied them on their reservation.

The Los Pinos Utes, under the personal influence and example of Ouray, have yielded more readily to agency control and seemed more inclined to make a small beginning in civilized habits than those at White River. The latter, moreover, for a few years past have been divided into two factions, under rival chiefs, between whom a bitter animosity has existed, and any measure proposed by the agent needed only to be supported by one party to be opposed by the other.

The geographical position of the White River Agency is of a very peculiar character, and the query forcibly presents itself why such a location was chosen at all. It can be reached only from the north by but one road, which during some seasons is passable for the transportation of freight but little over two months in the year, and is open on an average only from four to six months in a year. The surrounding country is broken; is out of the line of ordinary emigration westward; and, abounding in game, is in most respects a paradise for wild Indians. Under these circumstances it is not strange that Agent Meeker found the White River Utes to be a thoroughly wild and barbarous people, upon whom civilization had had scarcely any perceptible effect.

Soon after his appointment, Agent Meeker advised the removal of the agency from its old site to a point fifteen miles south, where a milder climate and more arable land was to be found, and where there was a better opportunity for putting the Indians at work. The agency was accordingly removed, new buildings were erected, and quite an extensive irrigating ditch was dug with Indian labor, and for a while the Indians, especially those of Douglas's band, seemed contented with their agent. The rival chief Jack, however, was opposed to the change of the agency, still remained with his people at the old location, and resisted all attempts to interest him in any improvements.

During last winter and spring frequent complaints were made by the agent, both to this office and to the military, relative to the absence of his Indians from their reservation, two of which are as follows:

WHITE RIVER AGENCY, COLORADO.

March 17, 1879.

SIR: I am informed that some thirty White River Utes are about to start for the north, having heard of the fighting in the Upper Missouri country. Their object

probably is to supply ammunition to the hostiles, and they get full supplies stores on Snake and Bear Rivers. These belong to the adverse faction, who work, and, having no fixed homes nor interest, they can start off at any time. I sent this information to the commandant at Fort Steele, and I have repeatedly reported to you of the sale of ammunition at these stores, and also reported the same to the commandant at Fort Steele.

Something like a dozen Indians are honestly at work in building and preparing land to plant, and I am doing all that possibly can be done to expedite such work, which on new land does not grow rapidly, but we are making good progress. Another year I hope the fruits of industry will be such as to keep all the Indians on the reservation.

Respectfully,

N. C. MEEKER  
Indian Agent

Hon. E. A. HAYT,  
Commissioner of Indian Affairs, Washington, D. C.

WAR DEPARTMENT  
Washington City, April 9,

SIR: I have the honor to transmit for your information copy of a communication from Mr. N. C. Meeker, Indian Agent at White River Agency, stating that a large number of White River Utes are about to start north, probably for the scene of Indian troubles, and requesting that all White River Utes be held or sent back to the reserve if going north.

General Sherman, in submitting the above letter, remarks that he understands the White River Utes have agreed to go south to the reservation; and that if they go north they simply complicate matters, and force on the military the most unpleasant duty of capturing them and compelling them to go to their new reservation.

Very respectfully, your obedient servant,

GEO. W. McCRARY  
Secretary of

The Hon. SECRETARY OF THE INTERIOR.

UNITED STATES INDIAN SERVICE  
WHITE RIVER AGENCY, COLORADO  
March 17,

SIR: It is my duty to inform you that quite a large party of White River Utes are about to start for the north, perhaps for the scene of Indian troubles. Whether they intend to mix in is doubtful, but I think it entirely certain they will carry considerable supplies of ammunition for sale to their allies.

I have before reported to you that there are several stores on Snake and Bear Rivers which keep full supplies of ammunition. I would hereby request you to advise the White River Utes bound north and either hold them or send them back to the reservation. They deserve a lesson. I wish also the sale of ammunition as above put an end to, agreeably to orders in such cases.

Respectfully, yours,

N. C. MEEKER  
Indian Agent

To the COMMANDANT AT FORT STEELE, WYO.

[First indorsement]

HEADQUARTERS FORT FRED STEELE, WYO.  
March 22,

Respectfully forwarded to headquarters Department of the Platte. Attention invited to inclosed letter of Indian Agent Meeker, and instructions requested. department commander desires any action taken in the premises.

T. T. THORNBURG  
Major Fourth Infantry, Commandant

[Second indorsement.]

HEADQUARTERS DEPARTMENT OF THE PLATTE  
Fort Omaha, Nebr., March 28,

Respectfully forwarded to the Assistant Adjutant-General, U. S. A., headquarters Military Division of the Missouri.

GEORGE CROOK  
Brigadier-General, Commandant



In another communication, dated December 9, 1878, the agent states:

There are four stores on the northern border of the reservation which sell ammunition. As a consequence the Indians all go to those stores to sell buckskins and expend what money they can get hold of, so that with the trade of the few settlers these establishments are doing a thriving business. Thus it is that with abundant supplies at this agency half the Indians are off their reservation. This condition of things leads to continued demoralization of the Indians; for, first, the traders tell them they ought to hunt and not to work; and, second, the Indians interfere with the cattle of stockmen by keeping their horses on their range, eating what they call their grass. One complaint, from George Baggs, a heavy stockman, was of so serious a nature, including the stampeding of cattle, that I have sent an interpreter to order the Indians back to their reservation. But you must see that the traders will use their influence to keep the Indians on those rivers that they may have their trade. I wish some steps could be taken to suppress the sale of ammunition. I do not suppose I can exercise any authority outside the reservation.

For thus intruding upon white settlements the Indians could easily find justification by pointing to the numerous mining camps which have been located on their reservation in direct violation of treaty provisions, viz:

The United States now solemnly agrees that no persons except those herein authorized so to do, and except such officers, agents, and employes of the government as may be authorized to enter upon Indian reservations in discharge of duties enjoined by law, shall ever be permitted to pass over, settle upon, or reside in the territory described in this article, except as herein otherwise provided.

This was also expressly reaffirmed in what is known as the Brunot agreement of 1873. This infraction of the treaty greatly irritated the Utes, and was undoubtedly one of the causes which eventually led to active hostilities.

On the 5th of July Governor Pitkin, of Colorado, sent the following telegram to this office:

SIR: Reports reach me daily that a band of White River Utes are off their reservation, destroying forests and game near North and Middle Parks. They have already burned millions of dollars of timber, and are intimidating settlers and miners. Have written Indian Agent Meeker, but fear letters have not reached him. I respectfully request you to have telegraphic order sent troops at nearest post to remove Indians to their reservation. If general government does not act promptly the State must. Immense forests are burning throughout Western Colorado, supposed to have been fired by Indians. I am satisfied there is an organized effort on the part of Indians to destroy the timber of Colorado. The loss will be irreplaceable. These savages should be removed to the Indian Territory, where they can no longer destroy the finest forests in this State.

Immediately upon its receipt the following telegraphic instructions were sent Agent Meeker July 7th:

Governor of Colorado reports your Indians depredating near North and Middle Parks. If correct take active steps to secure their return to reservation. The Secretary directs that if necessary you will call upon nearest military post for assistance. Report facts immediately.

And on the 9th instant the office telegraphed Governor Pitkin that the War Department had been requested to send troops to bring the Indians back to their reservation.

On the 7th of July, before the above instructions were received by him, Agent Meeker also reported to the office that he had been informed that bands of his Indians on Snake and Bear Rivers and in Middle and North Parks were destroying game for the skins and burning the timber, and that he had sent Chief Douglas with an employé to order their return to their reservation and had requested the commandant at Fort Steele to cause them to return.



These papers on the 17th of July were referred to the War Department, and the following reply was made thereto:

WAR DEPARTMENT,

Washington City, August 13, 1879.

SIR: Referring to your letter of the 18th ultimo, relative to affairs at White River Agency, Colorado, and depredations committed by Indians belonging thereto, I have the honor to state that the complaints therein alluded to have been duly investigated, and I would invite your attention to the inclosed copies of reports in regard to the same from Army officers and others.

Very respectfully, your obedient servant,

G. W. McCRARY,

Secretary of War.

THE HON. SECRETARY OF THE INTERIOR.

Copy of indorsements on communication: (4730, A. G. O., 1879,) dated July 18, from Interior Department, transmitting copy of letter of Commissioner of Indian Affairs, dated 17th instant, with inclosures relating to affairs at the White River Agency, Colorado, and action of the Indians at said agency.

[First indorsement.]

HEADQUARTERS OF THE ARMY,

Washington, July 28, 1879.

Respectfully referred to General P. H. Sheridan for investigation and report, relating these papers.

W. T. SHERMAN, General.

[Second indorsement.]

HEADQUARTERS MILITARY DIVISION OF THE MISSOURI,

Chicago, July 31, 1879.

Respectfully referred to the commanding general Department of the Platte for investigation, action, and report.

By command of Lieutenant-General Sheridan.

M. V. SHERIDAN,

Lieutenant-Colonel and Military Secretary.

[Third indorsement.]

HEADQUARTERS DEPARTMENT OF THE PLATTE,

Fort Omaha, Nebr., August 4, 1879.

Respectfully returned to the assistant adjutant-general U. S. A., headquarters Military Division of the Missouri, inviting attention to the report of Maj. T. T. Thornburgh, Fourth Infantry, commanding Fort Fred Steele, Wyo., and the accompanying statements of parties who were in the vicinity, and who were cognizant of all the facts.

Major Thornburgh's report with these statements are forwarded herewith.

From these statements it will be seen:

1. That besides killing the game the Indians committed no depredations.
2. That the post commander of Fort Steele, Wyo., did not receive timely information of the presence of the Indians referred to.

I ask attention to the fact that it is impossible for the military, placed as they are at such great distance from the agencies, to prevent Indians from leaving without authority, unless warning in due time by the Indian authorities is given. Nor can the post commander force them to return without running the risk of bringing on a war for which he would be held accountable.

For this reason the post commander is required to refer the matter to higher military authority, which also involves delay. Unless troops are stationed at the agencies they cannot know in time when Indians are absent by authority; nor can they prevent the occurrence of troubles, for which they are frequently and most unjustly held responsible.

GEORGE CROOK,

Brigadier-General, Commanding.

HEADQUARTERS FORT FRED STEELE, WYO.

July 27, 1879.

SIR: I have the honor to submit the following report of the recent visit of the Indians from the White River Agency to this vicinity:

About the 25th of June a band of some 100 Indians from the White River Agency



made their appearance at a mining camp on the divide near the head of Jack and Savoy Creeks, some 60 miles south of this post and engaged in hunting and trading in this vicinity for about one week, when they departed (as they said) for their agency.

I did not learn of the presence of these Indians until after their departure, nor was I notified by the agent at White River that they had left their agency until June 11, when I received a communication from him dated June 7, stating that a considerable number of the Indians had left their reservation and were burning timber and wantonly destroying game along Bear and Snake Rivers, also warning all miners and ranchmen, and requesting me to cause them to return to their reservation. Upon receiving this letter I made inquiries and could not find such a state of affairs to exist, but did find that the Indians had killed a great deal of game and used the skins for trade. The miners they visited in this section were not molested, but on the contrary were presented with an abundance of game. No stock was molested, and so far as I can learn no one attributes the burning of timber to these Indians.

Since I have been in command of this post (one year) Agent Meeker, of the White River agency, has written me two letters, dated November 11, 1878, and June 7, 1879. These letters have usually come to me after the Indians had paid a flying but peaceable visit to this country and departed (as they always say) to their agency. The White River Agency is situated some 200 miles from this post, and there are very few settlers in the country between Fort Fred Steele and the agency, consequently I am not informed as soon as I should be of the movements of these Indians. Bear and Snake Rivers are about 100 miles from this post, and to reach them by traveling this distance would require the trip to be made through a very rough country, impracticable for wagons, the only transportation available.

I have never received any orders from my superior to cause these Indians to remain on their reservation at the request of the agent, but am ready to attempt anything required of me. I have been able to communicate with nearly every ranchman residing within 100 miles of this post in reference to the late visit of these Indians, and forward herewith letters received from them. Both the letters mentioned above as having been received from Agent Meeker were forwarded to higher authority, and instructions have been asked to guide me in this matter.

I am, very respectfully, your obedient servant,

T. T. THORNBURGH,  
Major Fourth Infantry, Commanding Post.

The ASSISTANT ADJUTANT-GENERAL,  
Headquarters Department of the Platte, Fort Omaha, Nebr.

[Intersement on above report.]

HEADQUARTERS DEPARTMENT OF THE PLATTE,  
Fort Omaha, Nebr., August 11, 1879.

Respectfully forwarded to the assistant adjutant-general, U. S. A., headquarters Military Division of the Missouri for the information of the Lieutenant-General in connection with telegram of 8th ultimo from the Adjutant-General's Office, transmitted for my information and guidance and action, from your office, July 9, 1879. Attention is invited to the report of the commanding officer Fort Fred Steele, Wyo., on the subject, and to the accompanying statements.

GEORGE CROOK,  
Brigadier-General, Commanding.

[Inclosures to above report.]

UPPER NORTH PLATTE,  
Brush Creek, July 6, 1879.

DEAR SIR: In regard to your inquiries of the Ute Indians on the Upper North Platte, would say that there was about 65 or 70 lodges, as near as I can ascertain; they camped on Jack Creek, about the middle of June; they were evidently a hunting party, doing no damage and seeming perfectly friendly. They had caught some elk calves which they wanted to trade for cartridges, but the ranchmen would not trade. They traded them some butter for furs and skins, and killed enough game for their own immediate use.

Yours, respectfully,

TAYLOR PENNOCK.

Major THORNBURGH,  
Commanding Officer, Fort Fred Steele.

P. S.—They went south towards North Park between the 3d and 5th of July, but done no damage nor made no threats.

WARM SPRINGS, WYO., July 23, 1879.

DEAR SIR: In response to your inquiries regarding the Ute Indians who were recently in this part of the country, I submit the following:

The Indians committed no depredations in this settlement beyond slaughtering



game by the wholesale. No hostility was manifested toward any of the settlers, Indians conducting themselves peaceably and quietly. No cattle was killed and fires set.

Rumors of trouble in the North Park have reached here from time to time, but cannot vouch for their truthfulness. The Indians left this country for the North about the 3d of this month—at least not later than that time.

We have no one to blame for the Indians being in this country but ourselves, for we were aware of the fact that if you had been notified of their presence that you would have at once taken steps to remove them.

Yours, &c.,

J. T. CRAWFORD

Major THORNBURGH,  
Post Commander, Fort Steele, Wyo.

LAKE CREEK, CARBON COUNTY, WYOMING, July 24, 1880

SIR: In compliance with your request, I take pleasure in giving you all the information in my possession, in reference to the late visit of the Ute Indians from the White River Agency to this part of the country. I reside, as you know, about 25 miles south of Fort Steele, on the Platte River, and about the last of June I had occasion to go to Spring Creek, some 12 miles farther south, and I found that a band of some 100 Indians had just left Wagner's Ranch, having remained there only two days, and the time they used for trading horses, skins, &c.

These Indians are very friendly, and tried in every way not to get into trouble with any one. They killed considerable game, more than they could use, but that is not an uncommon thing in this country. I heard of no acts of hostility, and in fact I think that none was committed, as I have seen nearly all the ranchmen in 100 miles since their departure. I have seen Mr. Jones, a miner, from North Park, who told me that a good many miners when they learned of the approach of the Indians, left their homes and returned home.

No depredations were committed at the Park that I have ever heard of.

WM. BRANT

Major THORNBURGH,  
Commanding Fort Fred Steele, Wyo.

NORTH PLATTE RIVER, WYOMING,  
July 25, 1880

SIR: In reply to your inquiries I would respectfully state that the band of Indians who were lately here left this country on the 1st instant, going south into Colorado. I don't think they set out any fires or interfered with the settlers in any way here, and I have had a good chance to know. They killed considerable game.

Yours, respectfully,

B. T. BRYAN

Maj. T. T. THORNBURGH,  
Fort Steele, Wyo.

FRED STEELE, WYO.,  
July 26, 1880

DEAR SIR: In answer to your inquiry, I have just returned from a seven days' journey through the country which the Ute Indians have been traveling and hunting. Being well acquainted with settlers of the country, have met and conversed with many of them, and have heard no complaint except the great slaughter of game. I traveled 30 or 40 miles along the base of the mountains on their trail and did not see where a prairie or timber fire had originated from their camps, or where there had been a recent fire. I learn from the ranchmen that the Indians left the North Park about July 1, and have heard nothing further of their movements.

Very respectfully,

NEWTON MA

Major THORNBURGH.

WARM SPRINGS, WYO., July 26, 1880

SIR: In answer to your inquiry regarding the Ute Indians, I do not think that any of the fires in this part of the country, as the tie-men admitted to me that they saw on Brush and French Creeks caught from their camp-fires. They crossed on the Snake River about 30 miles south of Steele on June last or July 1, going north.

Very respectfully,

W. B. HUNTER

Maj. T. T. THORNBURGH,  
Commanding Fort Steele.

GRAND ENCAMPMENT CREEK, July 26, 1880

SIR: In reply to your inquiries concerning the Ute Indians who lately visited this region, I can inform you that I saw and traded with these Indians on or about

of July, when they were on their way south toward their agency by way of North Park. These Indians—about 50 in number—were very peaceable and polite, and did not commit any depredations, or show any hostility towards any of the settlers in this country. There were fires set about this time in the timber, but it is not known how they originated. I have, since their departure, learned from Mr. John Le Fevre, of North Park, that another band of these Indians were in North Park in June, and that some of the miners talked of driving them off, but on conversing with White Antelope, their chief, they learned that the Indians did not wish trouble, and they immediately left. This is all I know or have heard of this subject.

GREY NICHOLS.

Maj. T. T. THORNBURGH,  
*Fourth Infantry, Fort Fred Steele, Wyo.*

FORT STEELE, WYO., July 26, 1879.

SIR: Referring to your inquiries as to the doings of the Utes, who were lately in the Platte Valley, south of this post, I would respectfully state that a party of White River Ute Indians camped on Beaver Creek, June 30, they being then on their way south, and that they crossed the Colorado line July 1. During their stay on the Platte, they killed considerable game, but offered no violence to settlers, nor did they, so far I have been able to learn by diligent inquiry, set fire to any grass or timber in this country.

I have traveled all through the country referred to since the 1st of July, and am satisfied that had any violence been committed by the Indians, I should have heard of it.

Very respectfully,

J. M. HUGUS.

Maj. T. T. THORNBURGH,  
*Commanding Officer, Fort Fred Steele, Wyo.*

[Fourth indorsement.]

HEADQUARTERS MILITARY DIVISION OF THE MISSOURI,  
*Chicago, August 6, 1879.*

Respectfully forwarded to the Adjutant-General of the Army, inviting attention to the indorsement of General Crook, and report of Major Thornburgh.

P. H. SHERIDAN,  
*Lieutenant-General Commanding.*

On the 15th of July, in reply to office telegram of the 7th, the agent reported that the mission of Chief Douglass and the employé had been successful; that Middle Park had been vacated by the Indians; and that they were returning to the agency. He also stated that the Indians had no appreciation of the value of forests, and in order to obtain dry fuel for winter use, or to drive the deer to one place where they might be easily killed, fires were lighted, by which large tracts of valuable timber were burned over, to the great exasperation of settlers. To this communication the office replied as follows:

DEPARTMENT OF THE INTERIOR,  
OFFICE INDIAN AFFAIRS,  
*Washington, August 15, 1879.*

SIR: I am in receipt of your letter, dated 15th ultimo, relative to the departure of the Indians from the Middle Park, their destruction of grass, timber, &c., and referring to my telegram to you of the 23d ultimo, directing you to "take a decided stand with your Indians to prevent further depredations," have to state in addition that complaints of a serious character have been made to the office in regard to the fires which have been set by the Indians, as you have been advised by office letter of the 12th instant, and these heedless and lawless acts, unless checked, will lead to collisions between the whites and the Indians. You will, therefore, if possible, ascertain what Indians committed the depredations to which you refer, and have them arrested and subjected to some adequate punishment. Examples must be made of some of them in order to deter others from similar outrages.

In closing your letter you state incidentally that after the Indians have received their yearly distribution of annuity goods "they will depart and roam over a country as large as New England, where settlers are struggling to make new homes, and the Indians think it all right because they are, as they boast, peaceable Indians."

In reply, you are directed to adopt, without delay, decisive measures to put a stop to these roaming habits of your Indians. Office instructions embraced in the circular of December 23, 1878, in regard to their being treated as hostile Indians and liable to



arrest, if they are found outside of their reservation without passes, should be forced, and you should also give them to understand that their annuities will be withheld from them if they do not comply with the requirements of the office.

Very respectfully,

E. A. HAYT,  
Commissioner

N. C. MEEKER, Esq.,  
United States Indian Agent,  
White River Agency, Col.,  
via Rawlins Station, Wyoming.

On the 11th of August the agent again complained of the bad conduct of his Indians, as follows:

WHITE RIVER AGENCY, COLO., August 11, 1881

SIR: In a letter of this date (A) are several things connected with the subject of this letter. I have a strong belief that a raid is to be made on our herd through the connivance of the Indians, and what I want is sufficient military force to be sent to awe these savages, so that they will stay at home. When this shall be done the Indians will be in a condition to improve, but now it is simply impossible; indeed, I fear they are already so demoralized that years upon years will be required to bring anything out of them. A few, say twenty or thirty, I have under my control, and have great hopes of them; but the rest, fully 700, will not stay here. It is useless to anybody to tell me to keep them at home while there is no obstacle to their going away, and even while they are welcomed by white men who teach them all kinds of iniquities.

I had a conversation the other day on the cars with Major Thornburgh, commander at Fort Steele. He said he had always sent my requests forward and that he had received no orders, and he added that if you should request the Secretary of War to command him to keep the tribes on their reservation he could start a company of cavalry at a day's notice, but without orders he could not go ten miles from the reservation.

Another trouble lies in the stores on Snake and Bear Rivers, or even nearer by, where they sell ammunition for goods, playing-cards being in large supply. Let me ask you if it is the use of my warning these traders when they know I have no power to back it up. It is only a farce. I once wrote to the governor of this State about the violation of the law, and he told me if I could apply to the deputy United States marshal for the district he would move. I did not apply to him, because said deputy kept an office in the store himself.

The things to be done are three: Have the military break up the selling of ammunition (and liquor), and the buying of annuity goods at these stores. Then, if the Indians could not hunt they would work to get money, perhaps trap some, and a store would be established here. Of course the military must keep them on their reservation, and white men off. When these things shall be done the Indians will be able to consider the question of sending their children to school, and they will open their eyes. Now they will not. Already they are making their plans for going north, after the season gets their annuity goods, to hunt buffalo. If anything can be done I would like to have a hand in it.

Respectfully,

N. C. MEEKER,  
Indian Agent

Hon. E. A. HAYT,  
Commissioner Indian Affairs, Washington, D. C.

Upon that letter the following report was made by this office to the Secretary of the Interior September 1st, and was by him referred to the War Department September 2d:

SIR: I have the honor to transmit herewith copy of a letter dated 11th ultimo from the United States Indian Agent Meeker, of the White River Agency, respecting depredations committed by Indians of his agency, and difficulties in his way in keeping order upon the reservation without military aid.

The agent states that the large majority of them are "constantly off the reservation and intimately associated with the ruffians, renegades, and cattle thieves of the frontier," and he is of opinion that these outlaws, aided by the Indians, will make raids on the herds of government cattle during the coming winter.

The agent also calls attention to the evils resulting to the Indians from the unlawful traffic in ammunition and liquor by traders, whose stores are on Snake and Bear Rivers, and the necessity of military aid to break up this traffic. For the past several months or more frequent complaints have been made to the office on account



the traffic carried on with the Indians by the traders in the locations indicated, at whose stores the renegade Utes of Northern Colorado and hostile Bannocks in Southern Idaho and Wyoming Territories, with other lawless bands, have procured ample supplies of ammunition. Two years since, Capt. Charles Parker, U. S. A., stationed at Fort Steele, was directed on the recommendation of this office, to make an investigation of affairs on the Bear River, with a view to the establishment of a military post there to protect the settlers and break up the lawless traffic with the Indians and keep them upon their reservations. After a thorough investigation of the matter that officer, together with the agent of the White River Agency, reported strongly in favor of the measure, and on the 19th of September, 1877, copies of the papers were transmitted to the department, with a view to securing the necessary action on the part of the War Department; but the views of the General of the Army were then adverse to the recommendation of the officer, and the evils complained of have since become more widespread and serious in their character.

The agent urges the necessity of the employment of a military force to overawe and restrain the Indians, and to break up the traffic referred to on Snake and Bear Rivers; and it is respectfully recommended that his communication be referred to the honorable the Secretary of War, with the request that he cause the necessary orders to issue to the commandant at Fort Steele to detail the requisite number of troops for the purposes indicated.

Very respectfully,

E. J. BROOKS,  
*Acting Commissioner.*

The Honorable the SECRETARY OF THE INTERIOR.

About the 25th of August, the sheriff of Grand County went to the White River Agency with warrants for the arrest of two Indians charged with burning a house on Bear River, belonging to a man by the name of Thompson. In regard to this the agent states: "I attempted to get Chief Douglas to assist, so that these culprits might be found, but he refused, saying he knew nothing about them and he would do nothing. And yet he has been extremely friendly; he sends his boy to school and has worked all summer. The Indians were not found and the sheriff and posse of four returned."

Early in September a difficulty occurred between the agent and the Indians on a matter of plowing, of which the agent made the following report:

UNITED STATES INDIAN SERVICE,  
WHITE RIVER AGENCY, COLORADO,  
September 8, 1879.

SIR: We had recently finished plowing an 80-acre field, all inclosed; then we irrigated a piece of adjoining land, and upon which the agency buildings stand at a corner. This parcel lies between the river and the street coming to the agency, and embraces probably 200 acres, and the plan was to devote 50 acres next the street and agency to tilled crops and the remainder to grass land, and to inclose the whole with one common fence. First, it is necessary to have fields contiguous, that fences may be watched and depredators kept in check, and also to make the work of irrigation as inexpensive as possible, since to carry water far involves heavy outlays, besides being attended with the greatest difficulties by reason of uneven ground. In short, the described parcel was every way fitted for the object stated, and the new location of the agency was made with a view of utilizing and improving this particular land.

When we commenced plowing last week, three or four Indians objected. They had set their tents down towards the river, and corrals had been built, though I had previously told them the ground would be plowed. I offered to move their corrals by employes' labor, and showed them other places, of which there are many equally good, but they refused to consider. This land is good, and being close to the agency, their horses are protected; in short, they simply need the ground for their horses. Now, since it was evident that if I could have moved the agency buildings two or three miles below they would come and claim equal squatters' rights there also, and I told them so, to which they replied, that I had land enough plowed, and they wanted all the rest for their horses. Still they did indicate that I might plow a piece farther away, covered with sage and grease wood, intersected by slues and badly developing alkali, while at the best it would take three months to clear the surface. They would listen to nothing I could say, and seeing no help for it, since if they could drive me from one place they would quickly drive me from another, I ordered the plows to run as I had proposed. The first bed had been laid out and watered, 100 feet wide and half a mile long, and when the plowman got to the upper end two Indians came out with guns and

ordered him not to plow any more. This was reported to me, and I directed him to proceed. When the plowman had made a few runs around the bed fired upon from a small cluster of sage-brush, and the ball passed close to his

Of course I ordered the plowing to stop. I went to Douglas, the chief, but repeated that they who claimed the land wanted it, and that I ought to plow where else. Then I sent a messenger to Jack, a rival chieftain, ten miles up the river who has a larger following than Douglas, and he and his friends came down and the whole subject was discussed at great length. The conclusion was, that and his men did not care anything about it, but I might go on and plow that (the bed was about a half mile wide and one-half mile long). I said that was of no use; that I wanted the land for hay, and I wanted the rest for hay, as we had to go from 4 to 7 miles to the haying, and even there the Indian horses eat much of the grass. Then they said go on and plow as I proposed. This was either not understood or not assented to by the claimants, for when the plow started next morning they came out and threatened vengeance if any more than that bed was plowed. Immediately I sent again to Jack and his men, and the plow ran most of the forenoon, when I ordered it stopped. This time the employes were becoming scared.

Another long council was held, and I understood scarcely anything that was said, though I was present for hours, smothered with heat and smoke, and finally agreed that I might have the whole land and plow half of it and inclose the remainder. I would remove the corral, dig a well, help build a log house, and give the Indians to which I assented, for substantially the same had been promised before.

Altogether there were not more than four Indian men engaged in this matter. Properly, there was only one family, the wife of which speaks good English. The others have been brought up in a white family; the remainder were relatives, and besides several sympathizers, but by no means active. During all this time I had a readiness to go to the railroad to ask instructions from you by telegraph, but necessity for this seemed for the present averted. My impression is decided that the wish of all the Indians that plowing might be stopped and that no more should be done, but that the conclusion which they reached was based on the danger they ran in opposing the government of the United States.

Plowing will proceed, but whether unmolested I cannot say. This is a bad situation for the Indians. They have had free rations so long and have been flattered and pampered much, that they think themselves lords of all.

Respectfully,

N. C. MEEKER,  
Indian

Hon. E. A. HAYT,  
Commissioner of Indian Affairs, Washington, D. C.

Before the receipt of the above report by this office the following telegram came from the agent, announcing that the opposition to the plowing had been carried to the extent of making a personal assault on myself:

WHITE RIVER AGENCY, COLORADO,  
September 10

L. A. HAYT,  
Commissioner, &c., Washington, D. C.:

SIR: I have been assaulted by a leading chief, Johnson, forced out of my own house and injured badly, but was rescued by employes. It is now revealed that he originated all the trouble stated in letter September 8. His son shot at the plow and the opposition to plowing is wide. Plowing stops; life of self, family, employes not safe; want protection immediately; have asked Governor Pitkin to send troops with General Pope.

N. C. MEEKER,  
Indian

The telegram was received late Saturday evening, and on Monday morning, September 15, at the request of this office, the War Department ordered by telegraph that "the nearest military command at the agency detail a sufficient number of troops to arrest such chiefs as are insubordinate, and enforce obedience to the requirements of the agent, and afford him such protection as the exigency of the situation requires; also, that the ringleaders be held as prisoners until amicable negotiation can be had."



On the same day the office telegraphed Agent Meeker :

War Department has been requested to send troops for your protection. On their arrival cause arrest of leaders in late disturbance and have them held until further orders from this office.

Report full particulars as soon as possible.

To which he replied on the 22d :

Governor Pitkin writes, cavalry on the way. Dispatch of 15th will be obeyed.

On the 22d of September the office received the following telegram from the honorable Secretary of the Interior, relative to the arrest of two Indians against whom warrants had been issued :

DENVER, COLO., September 21, 1879.

HON. COMMISSIONER OF INDIAN AFFAIRS :

SIR : Two Indian Utes, Bennet and Chinaman, have been identified as having burned down citizen's houses outside of reservation ; warrants are out against them. Agent Meeker should be instructed to have them arrested and turned over to civil authorities ; efforts should also be made to identify Indians having set fire to forests outside of reservation. On consultation with governor and others, I am advised that settlement of Utes in severalty will be possible, on or near location now occupied by them, if properly managed. Steps to that end should be initiated as fast as possible.

C. SCHURZ.

On the 23d Agent Meeker was instructed by this office as follows :

Secretary telegraphs from Denver that two Ute Indians, Bennett and Chinaman, have been identified as having burned down citizens' houses outside of reservation. Warrants are out against them. Agent Meeker should be instructed to arrest and turn them over to civil authorities ; also, to identify and arrest Indians having set fires to forests. You will act on Secretary's suggestion, calling on military for assistance if necessary.

To this the agent replied by telegraph dated September 26 :

Would say to yours 23d September ; if soldiers arrest Indians and go away, I must go with them. Soldiers must stay. Large bodies of Indians leaving for the north to hunt. They insisted I should give out blankets now. I refused. Trade in guns and ammunition on Bear and Snake Rivers brisk. Company D, Ninth Cavalry, at Steamboat Springs, waiting instructions, which came to-day from General Hatch, and are forwarded to-day by employé.

The employé who carried to Captain Dodge the dispatches referred to was thus absent from the agency at the time of the massacre, and is the only male employé who escaped death.

On the 25th of September, Major Thornburgh, who was *en route* to the agent, sent the following to Agent Meeker :

HEADQUARTERS WHITE RIVER EXPEDITION,  
CAMP ON FORTIFICATION CREEK,  
September 25, 1879.

MR. MEEKER,

*Indian Agent, White River Agency, Colo. :*

SIR : In obedience to the instructions from the General of the Army, I am *en route* to your agency, and expect to arrive there on the 29th instant, for the purpose of affording you any assistance in my power in regulating your affairs, and to make arrests at your suggestion, and to hold as prisoners such of your Indians as you desire, until investigations are made by your department.

I have heard nothing definite from your agency for ten days, and do not know what state of affairs exists—whether the Indians will leave at my approach or show hostilities. I send this letter by Mr. Lowry, one of my guides, and desire you to communicate with me as soon as possible, giving me all the information in your power, in order that I may know what course I am to pursue.

If practicable, meet me on the road at the earliest moment.

Very respectfully, your obedient servant,

T. T. THORNBURGH.

To this Agent Meeker replies, under date of September 27, 1879, as follows :

SIR : Understanding that you are on the way hither with United States troops, I send a messenger, Mr. Eskridge, and two Indians, Henry (interpreter) and John Ayersley, to inform you that the Indians are greatly excited, and wish you to stop at some

convenient camping-place, and that you and five soldiers of your command occupy the agency, when a talk and a better understanding can be had. This I agree to. I do not propose to order your movements, but it seems for the best. The troops seem to consider the advance of troops as a declaration of real war. In the meantime, laboring to deceive them, and at the same time to convince them they can win whatever they please. The first object now is to allay apprehension.

Respectfully,

N. C. MEEKER  
Indian

On the 26th of September Major Thornburgh telegraphed to the department commander from Bear River:

Have met some Ute chiefs here. They seem friendly and promise to go with the agency. Say Utes don't understand why we have come. Have tried to explain satisfactorily. Do not anticipate trouble.

On the 28th of September Major Thornburgh wrote the agent as follows:

SIR: I shall move with my entire command to some convenient camp within striking distance of your agency, reaching such point during the 29th. Then halt and encamp the troops and proceed to the agency with my guide and soldiers, as communicated in my letter of the 27th instant.

Then and there I will be ready to have a conference with you and the Indians that an understanding may be arrived at and my course of action determined. I have carefully considered whether or not it would be advisable to have my command at a point as distant as that desired by the Indians who were in my camp last night. I have reached the conclusion that under my orders, which require me to maintain command to the agency, I am not at liberty to leave it at a point where it would be available in case of trouble. You are authorized to say for me to the Indians that my course of conduct is entirely dependent on them. Our desire is to avoid war and we have not come for war.

I requested you in my letter of the 26th to meet me on the road before I reach the agency. I renew my request that you do so, and further desire that you bring with you chiefs as may wish to accompany you.

To this Agent Meeker replied under date of September 29, 1891:

DEAR SIR: I expect to leave in the morning with Douglas and Serrick to meet you. Things are peaceable, and Douglas flies the United States flag. If you have trouble getting through the cañon to-day, let me know in what force. We have been here three nights and shall be to-night, not because we know there is danger, but because there may be. I like your last programme; it is based on true military principle.

On the same day, and probably before the receipt of Major Thornburgh's letter of the 28th, the agent telegraphed this office:

SIR: Major Thornburgh, Fourth Infantry, leaves his command 50 miles distant to-day with five men. Indians propose to fight if troops advance. A fight may be had to-morrow. Captain Dodge, Ninth Cavalry, is at Steamboat Springs. Orders to break up Indian stores and keep Indians on reservation. Sales of furs and guns brisk for ten days past. Store nearest sent back 16,000 rounds of guns. When Captain Dodge commences to enforce law, no living here without license. Have sent for him to confer.

The employé who was bearer of the dispatches to Captain Dodge relative to breaking up the sale of ammunition to Indians reports that the Indians whom Major Thornburgh met on the 26th were a band of 100 Indians under Jack, who camped with the soldiers on the night of the 25th and Friday. The next day he met Jack and his ten men at 11 a. m. on the road between Bear River and Williams's Fork, and was informed by Jack that 190 soldiers had just passed *en route* to the reservation, and he was asked for what purpose they had come. This seems to have been the first intimation that soldiers had been sent for, and from a telegram sent by the agent to Governor Pitkin, it appears that the agent considered it important that the call for troops should be kept concealed from the Indians.

As will appear from the above dispatches, the Indians again



Major Thornburgh's camp on the 27th instant, with a proposition that he leave his troops 50 miles distant and come with five men to the agency for consultation. The proposition being refused, the Indians evidently considered his advance with all his troops as an act of war, and when he crossed the reservation line at Milk Creek—a point about 25 miles distant from the agency—and was about to enter a cañon, a body of not less than 100 Indians were discovered, who opened upon the soldiers a deadly fire. Fighting as they went, the command fell back on the wagon train which was coming up in the rear. In this retreat Major Thornburgh and several others were killed. Horses, wagons, and everything available were immediately used for breastworks, while the Indians from the surrounding bluffs kept up a galling fire. In this desperate position the command under Captain Payne held its own until the morning of the 2d of October, when it was re-enforced by Company D, of the Ninth Cavalry, under Captain Dodge. This single company of colored troops, hearing of the fight, made forced marches, without orders, through the enemy's country, to the relief of the survivors.

Meantime, as soon as the news of the battle reached headquarters, several large bodies of troops were ordered to Milk Creek, and on the morning of October 5 Colonel Merritt arrived there with 600 men. He found the total losses to be 12 killed and 43 wounded. The combined forces then proceeded to the agency, where they found only dead bodies and burned buildings.

The news of the fight with Major Thornburg was conveyed by runners to the Indian camp near the agency, and the agent's letter of the 29th to Major Thornburgh had hardly been dispatched when the massacre of the agency employes began. All the men, eight in number, were shot; the wife and daughter of the agent and the wife of one of the employes, with her two children, took refuge in an adobe building and remained there for four hours until the buildings were fired. They then took the opportunity, while the Indians were busily engaged in helping themselves to the annuity goods, to escape to the sage-bush, but during their flight were discovered and fired upon by the Indians, Mrs. Meeker receiving a flesh wound. They were then taken captive and conveyed by the Indians, after a toilsome journey of several hours, to the camp to which three or four days previous the Indian women and children had been removed. Two teamsters who were coming up with Indian goods at the time of the massacre were also killed. The Indian report their loss in the first day of their attack on the troops as 23, and afterwards in their struggle with the employes and the freighters as 14.

While these events were transpiring among the White River Utes, Chief Ouray and his band had started out on a two months' hunt; but, as soon as he learned from an Indian runner of the massacre and the capture of the women, he hastened back to his agency in great anxiety and alarm, and immediately issued the following order:

LOS PINOS INDIAN AGENCY,  
October 2, 1879.

*To the chief captains, headmen, and Utes at the White River Agency:*

You are hereby requested and commanded to cease hostilities against the whites, injuring no innocent persons or any others farther than to protect your own lives and property from unlawful and unauthorized combinations of horse-thieves and desperadoes, as anything farther will ultimately end in disaster to all parties.

OURAY.

At the same time the following message was sent to the agent of the Southern Utes.

Sir: Ouray requests that I should say to you, and through you to the whites and Indians, that they need not fear any danger from the trouble at White River; that he

wants his people—the Utes—to stay at home and lend no hand or encouragement to the White River Utes; that the troubles there will be over in a few days; that sent Sopenevaro and others to White River to stop the trouble; and that outside interference will only tend to aggravate and do no good.

Very respectfully,

WM. M. STANLEY  
United States Indian Agent

Upon this the Southern Utes held formal council and expressed determination to take no part in the hostilities of the northern Utes. On the 9th of October, Ouray's courier returned with the report that the White River Utes had listened to the order, had stopped fighting and had moved with all their effects to Grand River.

This information was conveyed to the office in the following telegram of the same date:

Employé Brady and escort of Indians arrived from White River, reports Utes civilized and obeyed Ouray's order, withdrew, and will fight no more unless forced to do so. If soldiers are now stopped trouble can be settled by peace commission to investigate facts, and let blame rest where it may. This will save life, expense, and distress if it can be accomplished.

I concur and indorse the above.

STANLEY,  
OURAY  
Head Chief Ute Nation

In reply thereto the department telegraphed Agent Stanley, October 13, as follows:

Your dispatch received. Tell Ouray that his efforts are highly appreciated by the government. In view of the attack made upon the troops and massacre of agency employes the troops will have to proceed to White River Agency. Ouray should endeavor to prevent any resistance to this movement. The troops are now in great danger and resistance would result only in great disaster to the Indians. The hostiles have to surrender and throw themselves upon the mercy of the government. Guilty parties must be identified and delivered up. We shall see that no injury is done any one. Peaceable Indians will be protected. Ouray's recommendation that mercy in individual cases will be respected as far as the general interest may require. Special agents are being dispatched to Los Pinos with further instructions.

C. SCHURZ, Secretary

These terms were in accordance with article 6 of the Ute treaty of 1868, which provides that:

If bad men among the Indians shall commit a wrong or depredation upon the person or property of any one, white, black, or Indian, subject to the authority of the United States and at peace therewith, the tribes herein named solemnly agree that they will, on proof made to their agent and notice to him, deliver up the wrongdoers to the United States, to be tried and punished according to its laws.

An inspector was despatched to the Los Pinos Agency, and General Charles Adams, former agent for the White River Utes, was detailed as special agent to visit the hostile camp, with an escort furnished by Company C to demand the surrender of the captive women and children, the murderers of the employes, and those engaged in the attack on Major T. J.burgh. During these negotiations the troops were instructed by the Department to proceed no farther than the White River Agency to remain there until further orders. General Adams was well treated by the hostiles, and after a long and stormy council the captives were delivered to him without conditions, and on the 21st of October he arrived at Ouray's house, where every possible arrangement for comfort had been made by himself and wife. On his return from General Merritt's camp two more visits were made by General Adams to the hostile camp to demand the surrender of the guilty parties, and on the 29th of October he reported that the Indians appeared willing to



the guilty punished, and recommended that a commission be appointed to make an investigation, Ouray being in favor of the plan and agreeing to have the White River Utes in attendance.

Meantime the department had already sent to General Adams the ultimatum which was to be offered the White River Utes, viz: that they remove their camp temporarily to the neighborhood of Los Pinos; that a commission consisting of Brevet Major-General Hatch, General Adams, and Ouray meet at Los Pinos as soon as possible, to take testimony to ascertain the guilty parties—the guilty parties so ascertained to be dealt with as white men would be under like circumstances; and that the mischievous element in the White River band be disarmed.

This was accepted by the White River Utes, and on the 10th of November twenty of their chiefs and headmen, in obedience to Ouray's order, came to his house to meet General Adams. The others, whose camp was located 50 miles distant on the Gunnison River, were expected soon. Latest advices are that the commission is now organized, and that Johnson, Douglas, and Sawawick are giving testimony. • The testimony of officers who were engaged in the battle at Milk Creek, and the testimony of the captive women will also be given before this commission. Every effort to arrive at all the facts and to mete out exact justice will be made. Troops are stationed at Fort Garland in the south as well as at White River Agency in the north, ready for prompt action in the event of the possible failure of the commission.

The atrocity of the crimes committed should not prevent those individuals who are innocent from being treated as such, according to article 17 of the treaty, viz:

*Provided, That if any chief of either of the confederated bands make war against the people of the United States, or in any manner violate this treaty in any essential part, said chief shall forfeit his position as chief and all rights to any of the benefits of this treaty: But, provided further: Any Indian of either of these confederated bands who shall remain at peace and abide by the terms of this treaty in all its essentials, shall be entitled to its benefits and provisions, notwithstanding his particular chief and band have forfeited their rights thereto.*

The services thus far rendered by Ouray have been of inestimable value, and while the White River Utes have shown the very worst aspect of savage life, Ouray has shown courage and humanity and virtues of the better type, which should somewhat relieve the name of Ute from the odium cast upon it by the northern bands, for whose brutal and barbarous acts, whatever the provocation, no justification can be found.

In my annual report for 1877 I made the following statement of the case:

I recommend the removal of all the Indians in Colorado and Arizona to the Indian Territory. In Colorado, gold and silver mines are scattered over a wide extent of territory, and are to be found in every conceivable direction, running into Indian reservations. Of course miners will follow the various leads and prospect new ones without regard to the barriers set up by an Indian reservation. Hence the sojourn of Indians in this State will be sure to lead to strife, contention, and war, besides entailing an enormous expense to feed and provide for them. Again, there is no hope of civilizing these Indians while they reside in Colorado, as all the arable land in the State is required for its white settlers. A mining population needs in its immediate vicinity abundant facilities for agriculture to feed it. The question of feeding the white population of the State is one of paramount importance, and will certainly force itself on the attention of the government.

In the Indian Office report for 1878 the following extract will be found which has a bearing on the present issue:

The Ute reservation covers nearly 12,000,000 of acres, and fully one-third of the best arable land in the State; and it is situated in the heart of one of the richest mining regions in the United States. The mining population naturally want the arable land

to raise food for their support; and as the white population is rapidly augmenting their encroachments upon the Indians will be constantly on the increase; their lands, if put in the market, will readily sell at a fair price. These remarks refer mainly to the two southern agencies. The location of the Northern Ute is desirable, unless the land shall be found to contain minerals. But all the Utes should be removed at once to the Indian Territory, where there is fertile abundance of wood and water, and where there need be no white encroachments.

The "irrepressible conflict" between the white man and the Indian may be turned to good account for both parties in the accomplishment of desirable results. Let it be fully understood that the Utes have a good and sufficient title to 12,000,000 acres of land in Colorado and that these Indians did not thrust themselves in the way of the white people, but that they were originally and rightfully possessors of the soil, and that the land they occupy has been acknowledged to be theirs by solemn treaties made with them by the United States, and that the white people, well knowing these facts, took all the responsibility of making their settlements contiguous to the home of the red man.

It will not do to say that a treaty with an Indian means nothing. It means even more than the pledge of the government to pay a stipend. It is the most solemn declaration that any government of any country ever enters into. Neither will it do to say that treaties never have been made with Indians. That question is not now in order. These treaties have been made and must be lived up to, whether convenient or otherwise.

By beginning at the outset with the full acknowledgment of the legitimate and indefeasible right of these Indians to 12,000,000 of acres in Colorado, we can properly consider what is the best method of disposing of the Indian title thereto without injustice to the Indian and without violating the plighted faith of the Government of the United States. The first step in that direction will be to provide for a commission to visit the Utes and obtain their consent to removal from the State to some other location—say to the Indian Territory. On the condition of their receiving pay for the value of their lands in Colorado, the same to be obtained by appraisement and sale, in the manner in which certain Kansas and Nebraska lands have been disposed of for the benefit of Indians who formerly resided within their limits. A proposition of this kind should be fairly presented to the Utes, and no doubt they would give their consent, as scores of other Indian tribes, both the wildest and the most civilized, have consented under similar circumstances.

There are other considerations in the case of the Ute Indians which might be considered in connection with the proposed removal. The country at present abounds in game, and as long as that shall be the case the Indians will not work. Moreover, their location is admirably adapted to both defensive and aggressive Indian warfare. Its geographical position is also an advantage by which in time of war they can draw largely on the neighboring Indians for assistance either in defense or food.

The advantages to be obtained by removing them to the Indian Territory are (1) an abundant supply of arable land for cultivation; (2) immunity from white encroachment; and (3) better security for keeping the Indians peaceful, as the country is not adapted to Indian fighting. Everywhere offers open fields for the use of artillery and all the advantages of civilized warfare, so that whatever be the disposition of the Indians, if resort to force should be necessary, it could be made effective in the interests of peace.



## THE UTE COMMISSION OF 1878.

As was stated in the report of last year, the Ute commission appointed May 24, 1878, obtained from the Capote, Muache, and Weeminuche Utes, who occupied the southern strip of the Ute Reservation, an agreement to relinquish all that part of the reserve lying south of parallel  $38^{\circ} 10'$ , and to remove to a reservation on the headwaters of the Piedra, San Juan, Blanco, Navajo, and Chama Rivers, in Southern Colorado, as soon as the agency could be removed thither and buildings erected. The cession was concurred in by all the other bands of Utes. The area proposed to be ceded embraces about 1,894,400 acres, an excess of 728,320 acres over the proposed new reserve of 1,166,080 acres.

The report of the Commissioners, together with the agreement, which will be found on pages 170 of this report, was forwarded to the President, February 3d, 1879, for submission to Congress, with the recommendation that the agreement be ratified, and that Congress provide for the appraisal and sale of the lands ceded; the proceeds thereof, after deducting expense of such sale, to be invested for the benefit of the Indians. No action on the matter was taken by Congress.

The Commission also endeavored to obtain the cession of the tract four miles square which contains a part of the Uncompahgre Park; but the Utes refused to have anything to say on the subject unless a delegation could be sent to Washington for that purpose. Permission for the visit was therefore given, and a delegation visited this city in January last. They agreed to part with that portion of their reservation for the sum of \$10,000. The matter was submitted to Congress, with request that the necessary sum for the purchase be appropriated; but no action was taken. The tract referred to is for the most part fine agricultural land, which is greatly needed by the people of Colorado, and upon which white settlers have already gone in considerable numbers. It will be a matter of difficulty, if not impossibility, to remove these settlers, and to prevent others from going in and occupying the land; and so long as it is not paid for the Indians will justly consider such settlements as encroachments. The Indians most interested in the cession are the Los Pinos Utes, and in view of their good conduct during the hostilities of their friends and relatives, it is important that their loyalty should not be subjected to unnecessary tests. I, therefore, hope that the matter will not fail to receive the early and favorable consideration of Congress at its next session.

## VICTORIA AND THE SOUTHERN APACHES.

In 1871 about 1,200 Mogollon, Miembre, and Gila Apaches, known under the general name of Southern Apaches, were collected in the vicinity of the Mexican town of Cañada Alamosa, in Southwestern New Mexico. They had no reservation, had been accustomed to roaming and marauding, and the scanty rations which were then being issued weekly were insufficient for their subsistence, and had to be supplemented by such means as the Indians chose to adopt. For these Apaches a reservation containing the valley of the Tularosa River was selected by Hon. Vincent Colyer, and set apart by executive order in the fall of 1871.

As soon as the project of removal thither was broached, the majority of the Indians ran away, many of them to the Chiricahua Reserve in Arizona, and but 450 were prevailed upon to remove to the new reservation. These Indians were thoroughly displeased with the location,

were absent from the reserve during many months of the year, and generally unsettled, indolent, and intractable.

In the fall of 1874 the Hot Springs Reservation, near Cañada Alan was set apart, and the Indians removed back again to their old h and were occasionally joined by other bands till their number wa times nearly doubled. A small detachment of troops was kept a agency, and the Indians remained comparatively quiet, but were ful not to commit themselves to farming or schools. Between them their relatives, the Chiricahuas, in Arizona, frequent visits were changed, and there is little doubt that Hot Spring Apaches gave wi assistance to the Chiricahuas in their raids into Mexico.

At the time of the abolishment of the Chiricahua Reserve, in June, less than half of the Indians belonging there were taken to San Ca 162 removed themselves to the Hot Springs Reserve, and the rest, a 300, under renegade leaders, escaped to the mountains, and from retreats raided on the settlers in Southeastern Arizona. In March, it was definitely ascertained that not only were the renegades re-enf by the Indians from the Hot Springs Reserve, but, also, that that res tion was being used as a harbor of refuge for the outlaws. Accordi with the San Carlos Indian police force and the co-operation of the itary, the Southern Apaches, to the number of 453, were removed in 1877, to San Carlos; several prominent raiders were arrested and p irons; the remaining Indians of the agency were declared reneg and the reserve was restored to the public domain.

On the 2d of September, 1877, a majority of the Hot Springs In and a portion of the Chiricahuas, about 300 in all, suddenly left the Carlos Reserve. They were pursued and overtaken next day by v teers from the agency Indians, but only 30 were brought back. fugitives then struck a settlement in New Mexico, killing 8 persons stealing some horses, and forthwith all the available troops in that t tory were put into the field against them. In October, finding t selves unable to hold their own in a country thoroughly occupi United States soldiers and Indian scouts, 190 surrendered at Fort gate; others surrendered later, and all, to the number of 260, taken back to the Hot Springs Reserve in New Mexico, and there under the charge of the War Department.

In August, 1877, the Interior Department recommended that be returned to San Carlos, and in October arrangements were ma the War Department for the necessary detail of troops to serve as e during the removal. While bringing the Indians from their camp paratory to starting for San Carlos, 80 made their escape to the m ains. The others protested against going to that reservation, decl their willingness to go anywhere else; but they were removed th without difficulty.

In December, 63 of the tribe, who had been wandering in the m ains, came into the Mescalero Agency in a most destitute condition begged to be allowed to remain there.

In February, 22 under Victoria, who had been spending their more pleasantly in old Mexico, came near the military post at Caliente and had a talk with the commanding officer. Victoria expr his intention to surrender at that post provided Nauna's band, the Mescalero, might be allowed to join him. Accordingly, two of his with a pass good for fifteen days proceeded to Mescalero, report the agent, and conferred with their relatives there; Victoria and rest of the band remaining quietly at the post in the mean time. messengers returned at the time specified, but do not seem to

succeeded as well as they had expected, for the commanding officer, on February 16, reports only 39 Hot Spring Apaches as having surrendered with Victoria as prisoner of war, all of whom reiterated their determination to resist to the death any removal to San Carlos.

It was then decided to remove the band to Mescalero, but they declared themselves as bitterly opposed to Mescalero as to San Carlos, and on the 15th of April last the whole party again escaped to the San Mateo Mountains.

On the 30th of June, Victoria, with thirteen men, came into Mescalero Agency and had a conference with the agent, who endeavored to remove their constant fear of being sent to San Carlos, and assured them of protection and kind treatment if they would come to Mescalero and *stay there*. The band, numbering 28, accordingly came on the reserve and were enrolled among the other Southern Apaches at the agency. The purpose of these Indians to settle down and remain quietly at Mescalero seemed so sincere, that, at their earnest request, arrangements were made for bringing to them from San Carlos their wives and children, from whom they had long been separated.

In July last, three indictments were found against Victoria in Grant County, New Mexico, two for horse-stealing and one for murder, but no attempt seems to have been made on the part of the authorities to arrest him. The Indians, however, were aware of these indictments, and when a few days later a hunting party, which included a judge and a prosecuting attorney, passed through the Mescalero Reservation, the Indians, who were well acquainted with the official position of those gentlemen, believed the visit to be a preliminary step to the arrest of Victoria, and possibly of his whole band. The band, therefore, suddenly left the reservation, taking with them all the other Southern Apaches. They went west, and began again their old life of marauding, and though promptly followed up by the military, who have chased them across the line into old Mexico, their raid has caused much destruction both of life and property.

#### JOSEPH'S BAND OF NEZ PERCÉS.

The unfortunate band of Nez Percés under Joseph have finally found a resting-place 15 miles west of the Ponca Agency in the Indian Territory. They are located at the junction of the Shakaskia River and the Salt Fork. The country is sufficiently well wooded, and the land is of the best quality. The agent is engaged in putting up agency buildings and houses for the Indians. Yellow Bear, the second chief, shows a very good disposition, and is actively at work doing all he can to promote the welfare of his band.

The health of the tribe is greatly improved, and it is hoped that they will now settle down and become contented. They have been supplied with wagons, agricultural implements, and horses, and cows have also been provided for them.

#### MISSION INDIANS.

The necessity for early legislation to provide a suitable and permanent home for the Mission Indians of California is urgent. They are estimated to number about 3,000, and are scattered in small bands over San Diego, San Bernardino, and Los Angeles Counties, earning a precarious livelihood by cultivating small patches of land, and working for ranchmen and white settlers when opportunity offers. Many of them are now



occupying by sufferance lands which their ancestors have cult from time immemorial, and to which they supposed they had an putable right; but those lands have lately been found to be with limits of private land-claims confirmed by the courts to grantees the Mexican Government before the acquisition of California United States.

In many cases the owners or occupants of these ranches have a themselves of the labor of the Indians in cultivating the land (at most unjust and oppressively low rates, however), and the Indian also been permitted to occupy and cultivate small tracts for themselves but now, desiring to dispose of the ranches, or to use the whole for own purposes, the owners have threatened the Indians with sur ejection. This, together with the conflicts arising from trespass the lands of the ranchmen and settlers, by stock belonging to the Indians has kept these poor people in doubt and anxiety for two years past at the present day they are in a state of the most abject poverty found anywhere on the American Continent.

Several small reservations have been set apart by Executive order for these Indians, but on account of the lack of water for irrigation purposes, and the consequent sterility of the soil, they have been found to be of little value.

Attention is invited to the annual report of Agent Lawson, of 1883, from which it will be seen that the Mission Indians are a hard working people, and ask nothing from the government except a reservation, and inasmuch as there are no public lands in Southern California have any agricultural value, an appropriation of about \$50,000 would be needed for the purchase of sufficient land to enable these Indians to support themselves by their own labor.

#### SANITARY.

The sanitary condition of the different tribes of Indians of course depends very much upon their surroundings, and largely upon where they are located in river-bottoms or upon bluffs away from the unfavorable influences consequent upon such proximity. The monthly sanitary reports from physicians have been for the most part satisfactory, and a ratio of mortality to the number of cases treated indicates a remarkable degree of success. The number of cases of treatment of the sick reported at the different agencies during the fiscal year ending the 30th of June last is 67,352; the number of deaths, 1,936. As the medical corps consisted of only 59 physicians it is fair to infer that their duties were fully performed. The number of births reported by physicians is 1,000, which of course is far short of the actual number of births during the year.

A tabulated statement will be found on page 369 showing the number of patients treated, diseases, &c. From this it appears that the most morbid agents have been malarial and pulmonary diseases, especially the former. This is particularly noticeable among those Indians who have been removed from extreme northern to almost semi-tropical latitudes; but there is this prospective compensation for their present suffering: the change will favor longevity, as there will be an acquisition of total immunity from pulmonary diseases, the result of necessary exposure incident to the climate of the territory formerly occupied by them.

The nomadic life of the Indian renders the services of the physician at times very unsatisfactory on account of the difficulty experienced in subjecting Indian patients to the necessary diatetic discipline, but



will be modified gradually as the influence of the "medicine man" is succeeded by that of the intelligent and sympathetic physician.

#### CONSOLIDATION OF AGENCIES.

In the last annual report, the policy and economy of consolidating many of our Indian agencies was urged at length, with the recommendation that the surplus lands be sold, and the proceeds thereof be used for the benefit of the Indians.

During the current year the Omaha and Winnebago agencies have been consolidated, and the Red Lake and Leech Lake agencies have been consolidated with the White Earth Agency; the Flandreau Agency has been put in charge of the agent for the Santees. These movements are in the right direction, and there should be many more of like character. By the concentration of Indians the time needed to civilize them may be shortened, and the sale of their lands will contribute largely to their support in the future.

The carrying out of this policy in the consolidation of the Chippewas in Wisconsin, as provided in House bill 1139, first session Forty-sixth Congress, would be especially beneficial both to the Indians interested and to the government. These Indians occupy three reservations, embracing a territory largely in excess of their actual wants, covered with a heavy growth of very valuable pine timber, which is deteriorating in value every year or being destroyed by forest fires. Large quantities have also been removed in years past by trespassers. There are probably 600,000,000 feet of merchantable pine timber on these reservations, which, under present circumstances, is of no value to the Indians. The bill under consideration is intended to authorize the consolidation of the Indians upon the two reservations containing the best agricultural lands; the allotment and patenting of a certain number of acres to each individual; the sale of the remainder of the lands with all the pine timber on the reservations at an appraised value, and the funding of the proceeds for the benefit of the tribe. In the opinion of this office, such action would place these Indians in a most favorable condition to insure their civilization, and, at the same time, secure for them a fund sufficient, probably, to relieve the government from the necessity of making further appropriations for their support.

With a view to economy in future appropriations, and in order that justice may be done the Indians, I desire to call attention to the following-named bills, introduced at the late extra session of Congress: House bill No. 1140, for the relief of the Menomonee Indians in the State of Wisconsin; House bill No. 356, providing for the sale of the New York Indian lands in Kansas; House bill No. 353, providing for the sale of the lands of the Miami Indians in Kansas; and Senate bill No. 1124, for the relief of the Winnebago Indians in Wisconsin.

#### YAKAMA AND MALHEUR AGENCIES.

A large part of the Indians formerly at the Malheur Agency in Oregon are now under the care of Agent Wilbur at Yakama, Washington Territory. From September 1, 1878, until January, 1879, most of them were held at Camp Harney as prisoners of war, and were then removed, with about 100 others, to the Yakama Agency, at which place they arrived on the 2d of February last.

During the past season they have received very careful training and have improved in every respect. Indian civilization is carried on at the

Yakama Agency on business principles. The end and aim of the same are kept constantly in view. No time is lost in theorizing, and the Indian is made to earn his own subsistence and work out his civilization.

The 300 Indians now in the vicinity of the Malheur Agency and McDermott and Bidwell should also be sent to Yakama. The Malheur Agency should be abolished and the lands included in the reservation should be appraised and sold, and the proceeds of the sale invested for the benefit of the Indians.

#### RESERVATION TITLES.

Want of a title to their lands operates as a serious hindrance to the civilization of the Cheyennes and Arapahoes in the Indian Territory. They forfeited their treaty reservation by failing to settle thereon. They have been assured that the location now occupied by them is given in lieu of their treaty reserve. An act of Congress confirming this location would enable the agent to give them allotments in severalty, and would decidedly quicken their interest in farming. An Indian, like a white man, is not inclined to cultivate land of which he has only an uncertain tenure.

Title to the locations now occupied by the Poncas and Joseph's of Nez Percés should also be confirmed to these tribes by act of Congress. There should also be an act passed to enable the Secretary of the Interior to settle the boundary to be definitely settled. These matters having been left undetermined from year to year, will, if not properly attended to, result in contention and perhaps war.

#### INVASION OF THE INDIAN TERRITORY.

In the early part of last winter an extensive scheme was organized to take forcible possession of certain lands in the Indian Territory which had been ceded to the government for Indian purposes. Letters were published and circulated in the States surrounding the Territory, and parties interested in the project, declaring that these were public lands and were open to settlement by citizens of the United States. In a short time a large number of persons from Missouri, Kansas, and Texas were discovered in the act of entering the Territory, carrying household goods and farming implements, with the evident purpose of making permanent settlement.

This unlawful conspiracy was ascertained to be so extensive as to necessitate the adoption of speedy and vigorous measures, in order to prevent serious complications and trouble with the Indians. The attention of the President having been called to the matter by this department, on the 26th of April last, he issued a proclamation which was found on page 188, warning all persons who were intending or purporting to remove to the Indian Territory without permission of the proper authorities against attempting to settle upon any lands in said Territory, and notifying those who had already so offended, that they would be speedily removed therefrom by Indian agents, and that, if necessary, the aid and assistance of the military would be invoked to enforce the laws in relation to such intrusion.

Accordingly, upon the recommendation of the department, troops were posted at available points along the lines between the Indian Territory and Missouri, Kansas, and Texas, to prevent unauthorized parties from entering the Territory, and detachments and scouts were detailed to find and remove such intruders as could be found within its borders. By the diligent co-operation of the military authorities with the Indian Bureau, the intruders were speedily removed, and the unlawful invasion was checked.



## INTRUSION ON INDIAN LANDS.

Intruders have been equally troublesome on other Indian lands. In fact, there is hardly an Indian reservation within the limits of the United States which has not been subject to their encroachments. They resort to all kinds of devices and schemes to obtain a foothold on Indian soil, and offer ready and varied excuses for their continued unlawful occupancy of the same.

The great influx upon the different reservations of squaw-men, or white men married to Indian women, according to the lax custom of the tribes, may be adverted to in this connection. In most instances the man is penniless and dependent for subsistence on the rations which his wife draws from the government, but it is not long before he has a herd of cattle ranging over the reservation. On the Crow and other reserves, there are numerous instances of squaw-men who hold from 50 to 1,000 head of cattle, and the rapid manner in which their herds increase presents a very suspicious aspect. Within the last three years cases have been reported where government cattle have been stolen and the government brand altered by these men, and the cattle resold to the government. During the last two years this has been stopped by the most active vigilance.

The squaw-men assume that by marriage they have all the rights of full-blooded Indians, and they endeavor to exercise these rights not only in the possession of cattle themselves, but also in ranging and pasturing upon Indian reservations large herds belonging to other white men; and when the removal of such cattle is attempted by the agent, the squaw-men claim property in them under fictitious bills of sale.

The case of certain intruders on the Sioux Reserve in Dakota illustrates another method by which white men enter the Indian country and claim possessory rights. A few years since, when that reserve included both banks of the Missouri, it became necessary to allow white men to go upon the reservation for the purpose of cutting timber to supply fuel for steamboats carrying government freight on the Missouri River. A few white men went on the reserve for that purpose, while a larger number went, professedly for that object, but really with the design of permanently locating on the land, and cutting timber therefrom for the purpose of sale and speculation. The agents, however, now report the Indians as able and willing to supply the steamboats with such wood as they may need. A large tract of country extending along the east bank of the Missouri River, which was added by executive order to the Sioux Reservation, has recently been restored to the public domain; and, if the Indians should hereafter decline or be unable to furnish the necessary fuel, it can be supplied from this tract of land. The necessity, therefore, for the presence of white woodchoppers on the Sioux Reservation no longer exists.

Another class of intruders on the Sioux Reserve, on the pretense that it is necessary for the accommodation of the traveling public, have erected eating-houses, feed-stables, etc., at points on the roads, which were authorized by the treaties with said Indians to be built through their reservation.

Reservations containing rich and available grazing lands, such as the Crow, Malheur, Uintah, and several others, are often encroached upon by cattle-men, who drive their large herds on the most valuable grazing lands, and once there, the greatest difficulty is experienced in getting rid of them. Both cattle and intruders are often removed, but the herders return, or new herders are employed in their stead, and the cattle are again pastured on Indian lands. The herders are, in almost



every instance, irresponsible persons, against whom the penalty by sections 2147 and 2148 of the United States Revised Statutes effectual.

A strong effort was made in March last, by the Montana legisla to obtain the consent of the department to open up a cattle trail Helena to the eastern markets through the Crow Reservation, and rity of specious arguments were advanced in favor of the plan; b the ground of its being a direct violation of treaty provisions would justly endanger the present peaceful relations existing bet the government and the Crow Indians, the application was of c promptly refused. The owners of the cattle which have thus been d through that reserve, so far as they could be ascertained, have prosecuted under section 2117 of the Revised Statutes.

The attention of this office has often been called to the encroachm of miners and other intruders on the Ute Reservation in Colorad the San Carlos Reservation in Arizona. Numerous and extensive have been opened on both reservations, especially the latter, and effort of this office to remove the miners has thus far proved ineffe The question of intrusion on the San Carlos Reservation must r unsettled until the western boundary of the same is resurveyed, a appropriation to cover the expense of such survey should be made out delay.

Extensive depredations have been committed on timber standi Indian reservations in Michigan, Wisconsin, and Minnesota, but depredations have been checked to a considerable extent by the a and prosecution of the parties engaged or interested in such t speculations.

#### LAW FOR INDIAN RESERVATIONS.

In the last three annual reports of this office urgent appeals have made for the enactment of laws for Indian reservations. The follo bill was introduced at the last Congress and received the approbat the Judiciary Committees in both Houses, and was favorably rep on:

*Be it enacted by the Senate and House of Representatives of the United States of Am Congress assembled, That the President may prescribe suitable police regulatio the government of the various Indian reservations, and provide for the enforc thereof.*

SEC. 2. That the provisions of the laws of the respective States and Territo which are located Indian reservations, relating to the crimes of murder, mansla arson, rape, burglary, and robbery shall be deemed and taken to be the law, force within such reservations; and the district courts of the United States with for the respective districts in which such reservations may be located in any and the Territorial courts of the respective Territories in which such reservatio be located, shall have original jurisdiction over all such offenses which may b mitted within such reservations.

In respect to all that portion of the Indian Territory not set apart and occup the Cherokee, Creek, Choctaw, Chickasaw, and Seminole Indian tribes, the pro of the laws of the State of Arkansas relating to the crimes of murder, mansla arson, rape, burglary, and robbery shall be deemed and taken to be the law, force therein; and the United States district court for the western district of th of Arkansas shall have exclusive original jurisdiction over all such offenses ari said portion of the Indian Territory.

The place of punishment of any and all of said offenses shall be the same as fo like offenses arising within the jurisdictions of said respective courts.

It is a matter of vital importance that action should be taken to s the passage of the above bill, or of some measure of equal efficien provide law for Indians, to the end that order may be secured. A ilized community could not exist as such without law, and a semi ized and barbarous people are in a hopeless state of anarchy witho



protection and sanctions. It is true the various tribes have regulations and customs of their own, which, however, are founded on superstition and ignorance of the usages of civilized communities, and generally tend to perpetuate feuds and keep alive animosities. To supply their place it is the bounden duty of the government to provide laws suited to the dependent condition of the Indians. The most intelligent among them ask for the laws of the white man to enable them to show that Indians can understand and respect law; and the wonder is that such a code was not enacted years ago.

#### DEPREDACTIONS ON INDIAN TIMBER.

The laws of the United States relative to intrusion and depredation on Indian lands have proved ineffectual to prevent citizens of the United States from cutting and destroying timber standing thereon. Sections 2147 and 2148 of the United States Revised Statutes provide merely for the removal of intruders from the Indian country, and for the imposition of a penalty of \$1000 in the event of the return of any party after having been removed therefrom. The intruders, as a general rule, have no property subject to execution, and as the penalty can only be collected by an action of debt, the offenders escape without punishment.

Section 2118 is insufficient, for the same reason, to prevent unlawful settlement on lands belonging to Indians.

Section 5388 makes it a penal offense for any person to unlawfully cut, or aid in cutting, or to wantonly destroy timber standing upon lands of the United States which in pursuance of law may be reserved for military or other purposes. This section and the act of March 3d, 1875 (18 Stat., p. 481), which is somewhat similar in its provisions, were evidently adopted, the former for the single purpose of protecting timber on land which had been or might thereafter be purchased or reserved for the use of the military, or any other branch of the government, and the latter to prohibit the destruction of trees on land which had been purchased or reserved for public use. Neither the provisions of the section referred to nor the act are sufficiently comprehensive (especially in view of the rule of law which requires criminal statutes to be construed strictly) to extend to or include parties who have cut or destroyed timber on land within a large portion of the Indian reservations. The United States district court for the western district of Arkansas, at the last May term thereof, decided that the lands within the Cherokee Reservation in the Indian Territory were not lands of the United States in the sense of the language used in section 5388, and that there was no law to punish parties for committing depredations thereon. The reasoning of the court will apply with equal force to the lands of the Choctaws, Chickasaws, Creeks, Seminoles, and certain other Indians.

Most of the Indian reservations are now completely surrounded by a progressive and adventurous white population, which, only by stringent laws, can be restrained from taking possession of Indian lands, and hauling off or destroying the little timber left thereon. I deem it, therefore, of great importance that such a law be enacted as will prevent parties settling upon or cutting or wantonly destroying timber on the following classes of reservations, viz: Lands to which the original Indian title has never been extinguished, but which have not been specially reserved by treaty, act of Congress, or otherwise for the use of the Indians, or for other purposes, although the Indians' right of occupancy thereof has been tacitly recognized by the government; lands expressly reserved by treaty or act of Congress, or set apart for the use of the Indians by Executive order of the President; lands allotted or patented to individual Indians who are not under the laws of any State

or Territory; lands patented to Indian tribes; and lands which have purchased by, or ceded to the United States for the purpose of settling Indians thereon, but which are as yet unoccupied.

#### THE BOARD OF INDIAN COMMISSIONERS.

During the year several of the members of the Board of Indian Commissioners have rendered valuable aid and assistance to the government in the purchase of annuity goods and supplies. The members of the purchasing committee have especially devoted a great deal of valuable time to the service, and have supervised the awarding of contracts, the inspection of goods, and all the various details connected therewith. These services are rendered to the government gratuitously, and deserve more than a passing acknowledgment. The members of the board have also visited many Indian agencies during the year, and, as the result of their observations, have brought to the notice of the Bureau valuable facts and suggestions.

#### APPRAISEMENT OF KANSAS INDIAN LANDS IN KANSAS.

Since the date of my last annual report the commissioners appointed under the provisions of the act of July 5, 1876 (19 Stat., p. 74), to appraise the Kansas Indian lands in Kansas have completed their work, and submitted their report to this office, with accompanying schedules and abstracts. From these it appears that of the unsold portion of the "Kansas Indian Trust Lands" there are 137,808.13 acres, which were appraised at a total value of \$217,408.75. The improvements of settlers on these lands were appraised at a total value of \$47,654, making a total value of land and improvements \$265,062.75.

Of the "Diminished Reserve Lands" there are 78,570.34 acres, which were appraised at a total value of \$115,122.46. The improvements of settlers on these lands were appraised at \$58,008, making the total value of lands and improvements \$213,103.46, which, together with the appraised value of the "trust lands," makes a grand total of 216,378.47 acres valued at \$372,531.21; adding to this \$105,662, the value of settler's improvements, gives a total value of land and improvements amounting to \$478,193.21.

The schedules of appraisal were submitted by this office to the Hon. Secretary of the Interior for his approval on the 26th of April, 1879. They were approved by him on the 14th day of May, 1879, and duplicate copies thereof transmitted to the Commissioner of the General Land Office, with instructions to offer for sale to actual settlers under section 2 of the act of 1876, at the district office at Topeka, Kans., all the lands embraced in said lists, except those falling under the provisions of section 1 of said act, and those upon which entry heretofore been allowed, under section 2 of the act of June 23, 1876 (Stat., p. 272), which has been suspended by the late statute.

All those persons mentioned in the first section of the act of July 5, 1876, are now outside of any relief, as those who entered under the act of 1874 are under a repealed statute, and those who have not yet entered cannot comply with the act of 1876 by paying the first installment before January 1, 1877. Those persons who entered under section 2 of the act of 1874, prior to the act of 1876, are also without the provisions of any existing statute. The penalty of the act of 1874 cannot be enforced, as that act is repealed by the act of 1876, and they are not subject to the act of 1876 as they did not make entry under its provisions.

In order that these two classes of persons may have the relief which they are entitled to, further legislation by Congress will be necessary, extending the time in which to make payment and secure their lands.



The reports of the commission, with recapitulations of the appraisal of said lands, will be found on page 182 of this report.

I have the honor to be, sir, very respectfully, your obedient servant,

E. A. HAYT,

*Commissioner.*

The Hon. SECRETARY OF THE INTERIOR.

## REPORT OF THE COMMISSIONER OF THE GENERAL LAND OFFICE.

DEPARTMENT OF THE INTERIOR,  
GENERAL LAND OFFICE,

*October 30, 1879.*

SIR: I have the honor to report that pursuant to law there were surveyed during the fiscal year ending with the 30th June, 1879, 8,445,781.64 acres of public lands, and 1,039,214.26 acres of private land claims, making the total number of acres surveyed during the year 9,484,995.90. This shows an increase in the surveys of public lands as compared with the previous fiscal year of 414,769 acres. The total area surveyed from the beginning of operations to the close of the last fiscal year is 734,591,236 acres, leaving 1,080,197,686 acres yet to be surveyed of the total area of the public land containing States and Territories, viz, 1,814,788,922 acres.

The disposals of public lands during the fiscal year ending June 30, 1879, embrace an aggregate of 9,333,383.29 acres, being an increase of 647,204.41 acres over the previous fiscal year, which aggregate is made up of the following particulars, viz:

Cash entries.....	622,573.96
Being a decrease of 254,981.18 acres as compared with the previous fiscal year. In the above total of 622,573.96 acres is included the amount, 165,996.53 acres, entered under the desert land act of March 3, 1877.	

Homestead entries.....	5,260,111.29
Being an increase of 841,766.37 acres over the previous fiscal year.	

Timber culture entries.....	2,766,573.93
Being an increase of 896,139.75 acres over the previous fiscal year.	

Agricultural college scrip locations.....	900.00
Being an increase of 320 acres over the previous fiscal year.	

Locations with military bounty land warrants under acts of 1847, 1850, 1852 and 1855.....	50,820.00
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Being a decrease of 33,900 acres as compared with the previous fiscal year.	
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### *State selections approved:*

For school indemnity.....	85,474.65
For internal improvements.....	81,400.46
For agricultural colleges.....	680.00
For salt springs.....	18,836.62
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	186,391.73

Being a decrease of 28,600.80 acres as compared with the previous fiscal year.	
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### *Scrip locations:*

With Sioux half-breed scrip.....	1,879.05
With Chippewa half-breed scrip.....	640.00
With Valentine scrip.....	1,417.70
With Porterfield scrip.....	240.00
With Cole scrip.....	480.00
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	4,656.75

8,892,087.66

Locations of scrip issued under the acts of June 2, 1858, and June 22, 1860, in lieu of lands embraced in private claims, but not taken in place.....  
Being an increase of 4,429.84 acres over the previous fiscal year.

Lands patented to States as swamp under act of September 28, 1850.....  
Being a decrease, as compared with amount patented and certified during the previous fiscal year, of 127,537.77 acres.....

Lands certified for railroad purposes.....  
Being a decrease of 328,006.54 acres, as compared with the previous fiscal year.

Total number of acres disposed of during the fiscal year, being an increase of 647,204.41 acres over the previous fiscal year.....

The aggregate of moneys received during fiscal year ending June 30, 1879, is \$1,883,113.56. This amount is less by \$139,418.60 than the amount received during the previous fiscal year, and is made up as follows, viz:

Purchase money of lands sold.....	\$29,000.00
Homestead fees and commissions.....	57,113.56
Timber culture fees and commissions.....	25,000.00
Donation fees.....	1,000.00
Fees on pre-emption filings.....	7,113.56
Fees on homestead filings.....	1,000.00
Fees on mineral applications and protests.....	1,000.00
Fees on coal declarations.....	1,000.00
Fees on timber land entries.....	1,000.00
Fees on military bounty land warrant locations.....	1,000.00
Fees on agricultural college scrip locations.....	1,000.00
Fees on Valentine scrip locations.....	1,000.00
Fees on State school selections.....	1,000.00
Fees on railroad selections.....	1,000.00
Fees on wagon road selections.....	1,000.00
Fees for reducing testimony to writing in district land offices.....	2,000.00
Fees for transcripts of records in district land offices.....	2,000.00
Fees for certified copies furnished by this office under section 461 Rev. Stats.....	1,000.00
Fees from miscellaneous sources.....	1,883,113.56

During the fiscal year ending June 30, 1879, there were received by this office 82,575 letters, and there were written, recorded, and sent during the same period, 59,613.

#### SURVEYS.

Under the act of Congress approved June 20, 1878 (20 Stat., p. 308), the sum of \$300,000 was appropriated for survey of the public lands and private land claims for the fiscal year ending June 30, 1879, with proviso that not more than \$8,100 of this sum be used for clerical expenses of this office to write tract books for the local land offices, thereby leaving \$291,900 available immediately for the surveys, with an additional appropriation of \$30,000 for the survey of timbered lands exclusive of the above, making an aggregate of \$321,900 for the surveys in the field.

On the 13th day of July, 1878, the said amount was apportioned by the Secretary of the Interior, according to law, to the several survey districts, as follows:



*Apportionment of appropriations.*

For surveys in—	Timber lands.	Public lands.	Private claims.
Arizona .....		\$6,000	\$2,000
California .....	\$10,000	29,500	4,000
Colorado .....		23,400	1,000
Dakota .....		23,500	
Florida .....		6,000	
Idaho .....		12,000	
Louisiana .....		17,500	
Minnesota .....		15,000	
Montana .....		15,500	
Nebraska .....		12,500	
Nevada .....	5,000	12,000	
New Mexico .....		6,000	8,000
Oregon .....	7,500	18,000	
Utah .....		10,000	
Washington .....	7,500	18,000	
Wyoming .....		12,000	
	30,000	246,900	15,000
Amount apportioned for survey of—			
Timber lands exclusively .....			30,000
Amount apportioned for public surveys .....			246,900
Total amount for surveys .....			291,900
For examination of public surveys in the field .....			30,000
			321,900

In pursuance of the provisions of the act of June 20, 1878, as aforesaid, and the apportionment made of the money appropriated, a circular letter embracing instructions pertaining to the duties of the sixteen surveyors general for the fiscal year ending June 30, 1879, was issued on the 15th July, 1878, with certain modifications in their tenor according to the variant nature of the public service devolving on them, of which the following is a copy:

DEPARTMENT OF THE INTERIOR, GENERAL LAND OFFICE,  
Washington, D. C., July 15, 1878.

United States Surveyor General:

SIR: The following instructions are issued for your guidance in having public surveys made during the present fiscal year:

You will let contracts only to deputies of known ability, who are practical and faithful surveyors, for the survey of such classes of lands as are mentioned in the appropriation act approved June 20, 1878, viz:

First. Those adapted to agriculture without artificial irrigation.

Second. Irrigable lands, or such as can be redeemed, and for which there is sufficient accessible water for the reclamation and cultivation of the same, not otherwise utilized or claimed.

Third. Timber lands bearing timber of commercial value, either foreign or domestic.

Fourth. Coal lands containing coal of commercial value.

Fifth. Exterior boundaries of town sites.

Sixth. Private land claims.

Settlements in valleys remote from the regular progress of public surveys, requiring the extension of the base and other standard lines in order to reach such localities and to have them surveyed, should receive at your hands proper attention, and should written application be made to you by bona fide settlers for the survey of such valleys for agricultural purposes, you will apply a proper share of the amount apportioned to your surveying district out of the \$300,000 appropriated for the survey of public lands and private land claims per act of June 20, 1878.

Such valleys as may be thus reached, and are found either actually settled on or

presenting superior advantages for agricultural purposes to other unsurveyed immediately adjacent to the lands already surveyed into townships or sections, be given preference in the surveys.

In regard to the survey of "timber lands bearing timber of commercial either foreign or domestic," as provided under the third class of lands allowed to be surveyed, you will confine your field operations to *non-mineral timber lands*, and lands where depredations have been practiced or are likely to be carried on by bad parties, as under the provision of "An act authorizing the citizens of Colorado, Nevada, and the Territories, to fell and remove timber on the public domain for mining and domestic purposes," approved June 3, 1878, all citizens of the United States and other persons, bona fide residents of the States of Colorado or Nevada or of the Territories of New Mexico, Arizona, Utah, Wyoming, Dakota, Idaho, Montana, and all other mineral districts of the United States, are authorized and permitted to fell and remove for building, agricultural, mining, or other domestic purposes timber or other trees growing or being on the public lands, *said land being mineral.*

You will survey coal lands and extend township lines in mining districts, mineral claims may be located with reference to township and range of the surveys.

You will not contract for the survey of lands which subserve merely pastoral interests, such lands not being of the character authorized by law to be subdivided.

By direction of the department I have to inform you that if you should let contract for the survey of lands not authorized by the appropriation act, you will be held strictly accountable for so doing; you will therefore be vigilant in the selection of lands to be surveyed, taking only those which are known to you to be of the class authorized, either of your own knowledge or from that derived through actual application to you for the extension of public lines over their settlements.

In letting contracts for the subdivision of the public lands, you are required to stipulate the condition that the survey must include *all the lands in the township contracted for subdivision*, which are by law classed as surveyable, and except in the case of triangulation, that the deputy shall start from the proper bases or standard points.

If these last shall not have been established, that must first be done, and then there are no exterior lines of the township surveyed the deputy must first survey the township lines from south to north, in the regular progress, avoiding the practice in some cases of surveying districts of the township partly from north to south and partly from south to north, leaving the interior of the township partly unsurveyed, and thereby rendering difficult when the effort is made to complete the survey of the township and the surveys made from the south with those from the north by due north and east or west lines, as the law requires.

Where by reason of impassable objects the south boundary of a township cannot be established, an east and west line should be run through the township, first, if possible, then corrected, from one range line to another, and as far south as possible, and such line extend the section lines in the usual manner, except over any fraction of said line, which may be surveyed in the opposite direction from the section line to the auxiliary base thus established.

When you have townships subdivided, you will furnish your deputies with descriptions of all exterior corners, and instruct them to either describe particular corners on the south township lines from which they start, and the corners on the north, and west township lines upon which they close, or, if they find such corners corresponding to the description furnished them, they must state that fact in their notes, and if a corner on the township line is re-established, the notes should state in what manner.

In addition to the requirements of the Manual of Surveying Instructions, Supplement of June 1, 1864, you will require your deputies in all cases where they are used for corners to dig pits in the same manner as for corners marked by permanent mounds.

No mountains, swampy lands, or lands not classed as surveyable by law are to be meandered. All lines approaching such lands must be discontinued at the section or quarter-section corner.

All connection lines must be charged at the minimum rate provided in the appropriation act.

Augmented rates will not be allowed for meander or other lines of survey where field notes show that between the corners and at the line the land is mountainous or heavily timbered.

All modifications or changes in contracts after approval by the Commissioner as the substitution of an arable township for an inarable one named in contract must be immediately reported to this office, and a copy of your instructions relating thereto be transmitted to this office and to the First Comptroller of the Treasury.

In regard to deputies commencing work before they are notified of the approval of their contracts, and as to certificate of sufficiency of sureties to their bond, and



the proper officer to administer oaths to deputy surveyors, your attention is invited to the new form of contract and bond, copies of which will be sent you for immediate use, in lieu of the old form.

In order to guard against deficiencies arising from an excess of the estimated cost of work under contracts to be made, you should, for the present, leave a margin of the apportionment uncontracted for until you are satisfied from actual returns of all contracts let that no excess of work shall have been incurred requiring the application of said margin in payment thereof.

On pages 18 and 19 of the Manual of Instructions, which is made part of the laws governing the public surveys, the objects, whose description, character, and position should be noted and shown upon the plats, are carefully itemized.

Too little attention is now paid to these very important particulars. You are, therefore, instructed to require more exact compliance with such instructions, both in noting and delineating the objects therein enumerated.

It is also of great importance that the transcripts of field notes, which are expected to endure for ages, should be written in a clear, bold hand, so that every word and figure shall be legible and unmistakable as to its signification.

J. A. WILLIAMSON,  
Commissioner.

The surveying operations have been prosecuted during the last fiscal year to the extent of the appropriations made for that purpose, embracing 8,445,781.64 acres of the public land and 1,039,214.26 acres of private land claims, as shown by the following tabular statement:

*Areas surveyed in States and Territories, severally considered, both of public lands and private claims, during the fiscal year ending June 30, 1879.*

States and Territories.	ACRES.	
	Private claims.	Public lands.
Arizona.....		217, 616. 50
California.....	184, 142. 75	1, 292, 116. 07
Colorado.....	229, 814. 53	1, 069, 758. 82
Dakota.....		1, 167, 092. 26
Minnesota.....		364, 524. 75
Montana.....		618, 724. 11
Nebraska.....		778, 764. 20
Nevada.....		533, 879. 81
New Mexico.....	625, 256. 98	333, 821. 50
Oregon.....		622, 251. 09
Utah.....		188, 276. 79
Washington.....		685, 665. 44
Wyoming.....		679, 940. 93
Arkansas.....		3, 343. 41
Total.....	1, 039, 214. 26	8, 445, 781. 68

For the details of the surveying operations during the fiscal year ending June 30, 1879, reference is made to the accompanying annual reports of the sixteen surveyors general, of which the following synopsis is submitted:

*Arizona.*—The apportionment to this district for surveys of public lands for the past fiscal year was \$6,000. Under it one contract was let for surveys near the San Francisco Mountains. The cost of the work amounted to \$6,358.39, of which \$6,000 was paid, leaving a deficiency of \$358.39. Special deposits during the year for field work of survey of townships settled upon, \$949.99, which amount was expended.

The apportionment of \$2,000 for the survey of private land claims was not called for by any contracts entered into, and is now unavailable under the law. The amount paid to surveyor general was \$2,750. There were appropriated for clerks, \$3,000, which were expended, except a balance of \$70.36. The appropriation of \$1,500 for contingent expenses was all expended except \$33.10.

The sum of \$1,180 was deposited during the year for office work amount added to \$1,401.30 on hand at commencement of the year \$2,581.30 available, of which \$1,070 were paid out for office work were withdrawn by depositor, leaving \$1,470.94 unexpended.

One hundred and forty-five plats and diagrams of standard, town and section lines were prepared in the surveyor general's office, hundred of which were of mill-site and mining claims.

The number of miles surveyed in thirteen townships during the year was 751; area in acres, 217,616.46

The number of mill-sites and mining claims surveyed was 22 of same, 395.55 acres. Total lands surveyed in Arizona up to the end of the year, 4,707,214 acres.

The estimates for the surveying service for the year ending June 30, 1881, are as follows:

For survey of public lands, \$12,000; survey of private land claims, \$8,000; salaries of surveyor general and clerks, \$8,250; and incidental expenses, \$2,000.

Congress having made appropriation whereby the title to private lands can be investigated and reported upon, the surveyor general has given public notice that on and after September 1, 1879, such title will be duly attended to.

Attention is again called to the necessity of a survey of the San Carlos Mountain or San Carlos Reservation, so that its boundaries may be definitely located and public and private interests subserved. In the absence of such survey, there is great danger of armed conflict between the settlers and Indians.

A change in the laws applying to the survey and sale of public lands is earnestly suggested. Township lines should be extended to all pasturage and mineral lands, the price per acre reduced, and the quantity purchasable from the government largely increased.

2. *California.*—The assignments to this district out of the appropriation for surveys of public lands during the year ending June 30, 1881, were \$29,500 for agricultural lands and \$10,000 for timber lands. Thirty contracts were made under said assignments, and the sum of \$33,000 was paid for work returned.

The sum of \$31,979.22 was received as moneys deposited by landowners for surveys of public lands, and by railroad companies on account of surveys, &c. Thirty-five contracts for surveys were made payable from the special deposits, three of which were canceled.

The area of public lands surveyed in the year is 1,910,530.92; of miles run and marked, 6,808. The sum assigned for survey of public land claims was \$4,000, of which \$3,031.28 were paid out under contracts. The area of private land claims surveyed was 178,546 acres.

The amount of special deposits for office work on survey of agricultural lands was \$8,402.86, of which the sum of \$5,394.83 was money received from railroad companies for office work on lands selected by the commission.

The sum of \$7,959.85 was deposited for office work on survey of mining claims.

One hundred and seventeen mining surveys were made. Salaries paid to surveyor general, \$2,750; to clerks in his office from regular appropriation, \$10,998.86; to clerks out of appropriation of \$3,000 for making up arrears, \$2,998.99; and to clerks out of special deposits for work on public lands and mining surveys, \$14,642.09, leaving a balance of \$1,720.62 unexpended of special deposit fund.

The amount paid from the appropriation for incidental expenses was \$2,999.99.



For examinations in the field the sum of \$7,171.03 was paid, it being \$2,992 more than was assigned to that district.

The sum of \$1,974.23 was paid for expenses of suppressing depredations on the public timber.

The number of plats, maps, and diagrams made was 1,545; number of transcripts of field notes prepared, 204.

Sixty-seven descriptive notes of decrees of court in case of private land claims were prepared and transmitted.

The surveyor general recommends that all lands now unsurveyed should be sectionized without restriction as to character, and gives his reasons therefor at considerable length, for which see the report in full.

The completion of standard and meridian lines, as well as the township exteriors, is deemed imperatively necessary to avoid the serious errors resulting from the piece-meal system of projection of those lines now practiced. Subdivision of townships into sections may then be proceeded with as settlements demand and Congress makes appropriations.

Grazing and other lands being so intermingled, it is practically impossible to properly draw the line of demarkation under the present restrictions on classes of lands to be surveyed; consequently small tracts of valuable land must be left, causing surveys to be made in a fragmentary manner. The restrictions have not proved economical to the government, as the resurveys necessitated thereby more than offset the saving.

The provisions of section 2401 of the Revised Statutes, now applicable only to settlers under the pre-emption and homestead laws, should be extended to embrace the desert land act of March 3, 1877, and the act of June 3, 1878, providing for the sale of timber lands.

Very little of the timber land in the State has been surveyed, and as vast quantities of timber is used in the neighboring mines, the lands are consequently spoliated. The necessity of surveying these lands and permitting persons to make entries under the law is obvious.

Public attention is being directed toward the hitherto comparatively neglected belt of lands between the foot-hills and snow-line of the Sierra, where are thousands of acres sufficiently level for farming purposes.

The wine-growing interest of the southern portion of the State gives promise that California will soon rank with the foremost wine-producing countries of the world. From one and a half million vines in 1856, the number has increased to between forty and forty-five million. Exports during 1878 were 2,000,000 gallons, valued at \$1,300,000. During the first six months of the present year the exports reached 1,125,409 gallons of wine and 81,315 gallons of brandy, a gain of 260,000 gallons over the same time in 1878.

The examination of surveys in the field during the past year was very expensive, owing to being extended over work done in previous years as well as during the last fiscal year. Lack of appropriations for examinations of surveys in the field has led to looseness of work, while the moral effect upon deputy surveyors of an appropriation available to send a special agent at any time into the field for an examination of work will be readily perceived.

The surveyor general states that the policy of Congress in making such limited provision for the survey of the public lands in California has operated injuriously to the best interests of the State and small neighborhood communities.

Occupants of unsurveyed lands are unable to obtain title thereto. While the State has passed laws for the protection of these actual set-

tilers until the land may be lawfully acquired, they also protect a single individual speculator, who thereby is able to hold large tracts of thousands of acres of desirable land, without cost or taxation, by simply fencing, using, and occupying them, which it would be impossible for the party in possession to retain under existing laws if the land was surveyed, and which would furnish homes for a large number of families. In stating the estimate, \$20,000, required for clerks and draughtsmen in his office, the surveyor general gives a detailed statement of his official duties, to which he calls the attention of Congress. His reason for the estimate of \$20,000 for bringing up the arrears of office work is also stated at length.

The estimate of \$9,000 for the transcribing and reproduction of Spanish archives is also fully explained.

It is a matter of great difficulty to ascertain who are the present owners of unsettled private land claims. No decrees of confirmation have been filed in eighteen claims which were confirmed by the United States district court and decrees ordered; consequently surveys cannot be proceeded with until decrees are filed. Eighteen private land cases have been prepared and transmitted, the expense of thirteen of them being defrayed by interested parties.

The estimate of \$8,000 for the adjustment of deficiencies in the fund of special deposits by individuals is explained, and the cause of the deficiencies given at length in the report.

The survey of mining claims forms an important branch of the duties of the office, and the detailed duties connected therewith are set forth in the report. The whole number of mines surveyed to this time is nearly 2,000; number of deputy mineral surveyors on duty, 73.

The rectangular system of surveys, the classification of public lands, and the contract system *versus* salaried deputy surveyors, are respectively commented upon. The surveyor general concludes that the contract system is so readily understood by all classes of claimants that it cannot be supplemented by any so-called scientific system; that the classification now made by deputy surveyors is as accurate as can be made at moderate cost, and the matter should remain as under existing laws; and considering the question of contracts and salaried deputy surveyors from an economic and practical standpoint, he is of the opinion that the contract system is the better one.

Estimates for the surveying service during the fiscal year ending June 30, 1881, are as follows: Extension of standard and exterior lines, \$60,000; survey of subdivision lines, \$75,000; survey of timber lands, \$50,000; survey of private land claims, including necessary office expenses, \$10,000; examination of surveys in the field and travel expenses, \$5,000; clerks and draughtsmen, \$20,000; arrears of office work, \$20,000; messenger and incidental expenses, \$6,000; transcribing and reproducing Spanish archives, \$9,000; surveyor general, \$3,000; adjustment of deficiencies in fund of special deposits of individuals, \$8,000; total, \$266,000.

3. *Colorado*.—Under the apportionment of \$23,400, out of the appropriation of \$300,000 for surveying the public lands for the fiscal year ending June 30, 1879, thirteen surveying contracts were entered into, and the surveys returned thereunder amounted in the aggregate to \$23,903.93, being an excess over the appropriation of \$503.93.

Under contract of April, 1879, with Oakes and Kellogg, the Mesquite Springs and Zapato grant were surveyed at a cost of \$1,344.79.

For surveys made under the acts of Congress of May 30, 1862, and March 3, 1872, there were expended \$4,823.99, leaving a balance, which was repaid to depositors, of \$146.57.

Fifty-three townships were surveyed, embracing an area of 1,078,324.05 acres, at a cost of 2.3 cents per acre.

Two hundred and ninety-six mining claims were surveyed, embracing an area of 2,601 acres, the deposits for office expenses amounting to \$7,328.

The salaries paid the surveyor general and his clerks amounted to \$12,522.17, paid out of the regular appropriation and special deposits, leaving an unexpended balance of \$5,549.07.

The amount expended for rent of office, books, stationery, fuel, and other incidental expenses, was \$2,342.40, paid out of the regular appropriation and special deposit fund.

Individual deposits show an increase of about \$1,400 over the preceding year.

The office is in arrears five years in the preparation of descriptive lists for the local land offices.

The estimates submitted for the fiscal year ending June 30, 1881, are:

1. Salaries of surveyor general, clerks, and draughtsmen, \$10,800; 2. Incidentals, \$3,000; 3. Surveys, \$100,200.

The surveyor general reports that settlements continue in advance of surveys, and estimates the immigration to the State this season at 100,000 people, who have penetrated into every section thereof.

In addition to the carbonates found in the vicinity of Leadville, discoveries of vast bodies of minerals have been made, notably in the Elk Mountains, in Gunnison County, and near the Musquito Pass, in Lake County. Ruby silver has been found in paying quantities within the limits of the Ute Indian reservation.

The destruction of timber has been enormous, partially the result of accident, but often by the criminal carelessness of prospector and campers. All of the timbered lands should be surveyed, as a means of protection both to the government and the settler.

Railways have been extending their lines in every direction. The Denver and South Park Railway has been graded into the Arkansas Valley, and before "snow flies" will be running to Leadville.

4. *Dakota.*—The amount of the appropriation assigned for public surveys in Dakota during the year ending June 30, 1879, was \$30,500. Five contracts were made payable out of the assignment, and the amount of work paid for was \$23,207.43, leaving unexpended \$7,292.57.

The area of land surveyed in 47 townships during the year was 1,042,116 acres, which added to the area previously surveyed makes 19,780,876 acres surveyed in the Territory, exclusive of Indian and military reservations, town sites, and mining claims. The number of miles of base, township, and section lines run and marked in the year was 3,407; forty-six lode claims and nine placer mining claims were surveyed.

The sum of \$1,710 was deposited for office work on survey of mining claims. There was on hand July 1, 1878, an unexpended balance of \$910 from former years, making available the sum of \$2,620. Of this amount \$1,888 were expended, leaving \$732 to the credit of that fund.

For salaries, there was paid to the surveyor general and his clerks, \$6,500; and for incidental expenses, \$1,500; those amounts being appropriated for the objects mentioned.

Immigration has exceeded the largest estimates, and Dakota is believed to lead all other lands States and Territories in the number of acres settled upon during the year.

Unimproved agricultural lands, on the line of the Northern Pacific Railroad, sell as high as \$9 and \$10 per acre.

The wheat crop will average from 10 to 35 bushels per acre, notwith-



standing unfavorable conditions. Other crops are exceptionally good. The mineral and agricultural wealth of the Black Hills is being steadily developed.

The recent executive order restoring to market a large tract of land east of the Missouri River will cause increased immigration to the fertile lands. A wide strip through its entire length, bordering the river, should be immediately surveyed.

The competition of the Northern Pacific, Milwaukee and Saint Paul, Chicago and Northwestern, Southern Minnesota, Dakota Southern and other railroad lines, which are pressing forward to share in the prosperity and wealth of Dakota, bears testimony to its rapid growth and fine prospects.

Public surveys should keep pace with this onward march, and subserve the interests of the general government and necessities of the Territory.

The estimates for the year ending June 30, 1881, are as follows: For surveys, \$139,920; for salaries, \$12,000; and for incidental expenses, \$2,000.

5. *Florida*.—Four contracts for surveys were entered into during the year ending June 30, 1879, one being for the continuation of surveys along the Georgia-Florida boundary line. One contract was canceled by the Commissioner of the General Land Office. The amount for the year was \$6,000. Of the three contracts not closed at the end of last annual report, one still remains unfinished, it being for the survey of islands in Denler Lake in township 16 south, range 29 west, which on account of high water remain yet unsurveyed. Nine township plats were prepared and forwarded to the local office, all but one being of surveys of lots along the State boundary.

The surveyor general estimates as follows, for year ending June 30, 1881: For surveys, \$5,000; for salaries, \$6,200; incidentals, \$1,000; total for surveying service, \$12,200.

6. *Idaho*.—The surveyor general reports that the surveys in his district for the past fiscal year were greatly impeded, and finally stopped by the late Indian war. Owing to this cause he was compelled to extend the time of contracts. Although three contracts have been made for the full amount of assignment of \$12,000 of appropriation, no work has been returned by reason of high waters and the many disadvantages. He has made a personal inspection of surveys in the field, of which report was transmitted to the General Land Office July 12, 1879.

A decided interest in agricultural interests is reported, particularly in the eastern part of the Territory, on the line of the Utah Northern Railroad. In the districts of Yankee Fork, Atlanta Banner, and Snake River City, rich mines of gold and silver are worked to advantage, and the roads and cheaper transportation are only needed to largely increase mining interests. Placer mines along Snake River are being worked by a new process for saving fine gold, with promising success.

The appropriation for the salaries of the surveyor general and his clerks is deemed insufficient, and the exigency of the office demands the estimated appropriation for clerk hire so that a chief clerk and draughtsman may be retained permanently.

The estimates for the survey of public lands are what the surveyor general considers actually necessary, and aggregate \$18,240. They embrace 180 miles of the third standard parallel north and 2,040 miles of exterior and subdivision lines. For salaries, \$7,000; incidentals, \$2,000.

Thirty-six original maps and copies were transmitted to the General Land Office, and 10 descriptive lists to local land offices. Total amount



10 townships surveyed since last report, 172,687.91 acres; adding 376 townships, 6,231,722.25 acres of public lands, and 37 townships of Indian reservations, 464,907.28 acres, previously reported, make the total area surveyed to date of present report, 6,869,317.44 acres. Two sulphur mining claims in Oneida County were surveyed during the past fiscal year.

The amount paid for surveys under contracts made in the year ending June 30, 1878, and not hitherto reported, is \$5,660.61, leaving a balance of \$779.81 to revert to the Treasury.

The appropriation of \$5,000 for salaries of surveyor general and clerks during the past fiscal year was all expended except \$2.28.

The \$1,500 appropriated for incidental expenses were expended except forty-nine cents.

7. *Louisiana.*—Two contracts for surveys were made under the assignment of \$17,500 of appropriation for fiscal year ending June 30, 1879. Estimated liability, \$16,000; amount paid, \$15,628.22; not reported for payment, \$1,871.78; retained to meet excess of contracts, \$1,500; excess on contracts, \$5,861.66.

Work was confined to the pine timber region in the southwestern portion of the State, where 27 townships have been resurveyed. Large entries of timber lands are reported, that of one person exceeding 5,000 acres. The reports of deputy surveyors show a larger percentage of *bona fide* homestead entries than was anticipated.

Under the assignment of \$14,000 for the current fiscal year five contracts have been let for the continuation of resurveys in the southwestern district. Contracts are contemplated for the survey of two townships in the William Conway portion of the Houmas grant under the order of the Secretary of the Interior, dated June 21, 1879. The surveyor-general regrets that the whole of each subdivision of said grant cannot, under the present allotment, be surveyed, as hundreds of new settlers are desirous of locating upon these lands under the homestead and other laws. A large number of original settlers and their descendants, who now occupy lands and who have made extensive improvements thereon, should be protected, as these lands were originally entered under the pre-emption acts of 1830 and amendments. But little work has been done in issuing certificates of location under the act of June 2, 1858, and only 11 claims acted upon and certificates issued during the fiscal year. Total number issued to close of fiscal year, 432 out of 1,524 unsatisfied claims, leaving 1,092 to be adjusted.

Some progress has been made in bringing up the arrears of office work. Transcripts of fieldnotes for 24 townships have been made, leaving 760 townships yet to be transcribed. Thirty-two patent plats of 16 claims have been made. There are about 6,000 claims which cannot be patented until the plats are prepared and forwarded.

The surveyor general's estimates for surveys during the fiscal year ending June 30, 1881, aggregate \$62,050, subdivided as follows: For completing the resurveys in the southwestern district, 22 townships, embracing the timber lands now being despoiled, \$17,400; for the resurvey of townships in the southeastern district on the Mississippi River, above New Orleans, as far as Donaldsonville, and for private land claims, \$7,850; for original surveys in the southwestern district on the Gulf coast, south of old surveys of 1807 and 1830, \$14,000; for original surveys on the southeast pass of the Mississippi River and Bayou Balize, contracted for in 1875 but not executed for lack of funds, \$1,800; to traverse part of Sabine River, connect township and section lines, locate private land claims, and complete survey of townships 4 south,

ranges 1 and 2 east, S. W. D., contracted for in 1875 but unfinished reason of deficient appropriations, \$6,000; for the survey of the Hour grants, embracing about 200,000 acres of sugar and rice lands, and dered surveyed by the Secretary of the Interior under his decision May 4, 1878, \$15,000.

Estimates for salary of surveyor general and clerks, \$6,800; 14 cle for arrears of office work, plats, and field notes, \$14,000; conting expenses, \$2,000.

8. *Minnesota*.—All the contracts for surveys not closed at date of annual report have been completed.

For the fiscal year ending June 30, 1879, four contracts for survey were made out of the assignment of \$15,000. The work under the contracts has been returned, examined, and approved, and the sum \$11,439.31 paid, leaving the sum of \$3,560.69 to be applied to the p ment of work to be returned by Deputy Hamilton, consisting of surv adjacent to the Red Lake Indian reservation, the estimated cost of wh will cover the balance of the assignment.

Number of acres surveyed since last report, 364,516.75, which, ad to 39,689,123.08 acres previously surveyed, makes a total of 40,053,63 acres surveyed to date. Fifty-seven plats were made of 19 townsh surveyed. Descriptive lists of all surveys were furnished to the l office, and transcripts of field notes to the General Land Office.

Owing to the small appropriation for clerk hire, but little was don the arrears of office work. Record transcripts of 41 townships have b prepared and bound. A large amount of miscellaneous office work been performed.

One contract was entered into in May, 1879, payable out of the appriation for the year ending June 30, 1880, for the survey of lands a cent to Pigeon River Indian Reservation. The appropriation of \$7. for salaries of surveyor general and clerks was all expended excep cents. Of the appropriation of \$1,500 for incidental expenses there expended \$1,160.58; balance remaining, \$339.42.

The sums estimated for the surveying service for the year ending J 30, 1881, are as follows: For surveys, \$49,900; for salaries, \$10,500; incidentals, \$1,500.

The estimates for surveys for said year contemplate the extension the meridian and correction lines north of the present surveyed por of the State, west to the 3d guide meridian, and the townships cont ous to Rainy Lake and Rainy Lake River; also pine lands on stre flowing north into said lake and river. This region, heretofore inac sible for want of communication, is now being opened up through the C adian Pacific Railroad, which, together with steamboat navigation f Rat Portage to Fort Saint Francis, near Rainy Lake, forms a route ing ready access to markets, and has greatly enhanced the demand lands on the Canadian side, and the lands on this side being more de able would soon be settled if they were surveyed. Frequent inqui are now made concerning these lands. Large tracts of pine and ha wood timber lands are in that vicinity, upon which depredations constantly being made by border settlers on either side of the line, still greater waste is caused by fires.

A modification of the law for the disposal of timber lands is rec mended, so that the lands should be appraised immediately after surv and then sold for cash at valuation, which would prove valuable to government, and save great expense in the detection and prosecution trespassers.

9. *Montana*.—Under the apportionment of \$15,500 for surveys in



Territory during the year ending June 30, 1879, five contracts were let, and the work has been done and accounts have been rendered to the amount of \$15,662.80, being an excess of \$162.80 over the apportionment. Surveys were made in 33 townships of 524,312 acres of agricultural, coal, and timber lands; also of 70 lode and placer claims with an area of 1,668 acres. Of the appropriation of \$5,750 for salary of surveyor general and clerks, only 83 cents remain unexpended. One thousand five hundred dollars were paid for contingent expenses. Total cost of surveys, \$15,662.80; for inspection of same, \$941.93; office expenses, including salaries, \$7,249.13; cost of field work per acre, three cents; cost of inspection, two mills per acre; cost of office work per acre, one cent and four mills; total cost per acre to government, four cents and six mills. Much of the land surveyed was along the Yellowstone River. The exterior boundaries of 15 townships containing coal lands and other minerals were surveyed. The number of miles run was 4,194. The total expense of the surveying service was \$23,358.86. Net cash receipts for entry and sale of lands in Montana, \$22,491.18, during the year.

The sum of \$2,000 was deposited during the year for office work on surveys of mines. Of this amount, \$1,690.49 were paid out, leaving a balance of \$309.51, which, applied to the deficiency of \$853.93 existing from former years, reduced the deficiency to \$544.42, it being overdrawn on special-deposit account. There were deposited for survey of a town site, \$125; for office work, \$25. Four hundred and sixty-one plats and diagrams were prepared. Of these, 288 were of mineral claims. Five hundred and eighty-nine letters were written. Surveys of 33 townships were platted, and transcripts of the field notes were prepared, also descriptive lists for the local offices.

The surveyor general's estimates for the surveying service for 1881 are as follows: For surveys, \$45,800; for preliminary examination of the country, \$3,000; salaries, \$9,300; contingent expenses, \$2,500. He states emphatically that his estimates only cover the actually necessary expenses. A higher rate per mile for surveys is urged. If the surveyor met with no losses and delays, principally by the Indians, he could survey at the present rates allowed; but in view of the risks, losses, and delays, he should have \$12 for standard, \$10 for township, and \$8 for section lines. Meander lines should be paid for the same as standard, in timbered lands. Base lines should be run through Indian reservations for the sake of uniformity in surveys. Exterior township lines should be run over the whole country, and topographical and other information be obtained in running the same. Mineral lands should be subdivided. Pastoral lands should also be surveyed and sold at reduced rates, in large bodies, to stock raisers already on them. Deputy surveyors should make four classes of lands: first rate, rich, agricultural lands, needing no irrigation; second rate, agricultural lands, needing irrigation; third, pastoral lands; fourth, worthless lands. Personal inspection of surveys in the field has proved quite beneficial. Estimated export of gold and silver, including bullion and ore, \$5,000,000 during the year.

10. *Nebraska*.—The original assignment for surveys in this district for the year ending June 30, 1879, was \$22,500, out of which two contracts were made, and the work has been completed and returned at a cost of \$21,517.97, leaving a balance of \$982.03, which, with \$2,500, an additional assignment, is applicable to pay for work under a third contract, the work of which is not returned. Number of miles run in work returned, 3,256. Thirty-four townships subdivided, having an area of 777,764.13

acres. Field notes of these surveys have been examined, approved, transcripts furnished to the General Land Office; also descriptive and plats to the local land offices, and plats to the General Land Office.

The appropriation for salaries of surveyor general and clerks for the year ending June 30, 1879, was \$5,000, and was all expended, except cents. The balance of special deposit for office work by Union Pacific Railroad Company and Burlington and Missouri River Railroad Company on hand June 30, 1878, amounting to \$9,799.35, still remains unexpended.

The appropriation of \$1,500 for incidentals was all paid out. There remains unexpended a balance of \$282.98 of deposits for field work by railroad companies left from former years.

Immigration has been very large during the year, and of an excellent class. Abundant crops have been yielded, and the extension of railroads has increased the means of transportation. The railroad companies have made great inducements to settlers to take their lands.

The surveyor general recommends, as an economical measure, an appropriation for the fiscal year ending June 30, 1881, sufficient to complete the public surveys in Nebraska. He estimates \$115,000 as a minimum amount. Estimates for the surveying service for the fiscal year ending June 30, 1881, aggregate \$48,594, and are for surveys in the extreme northern and western portions of the State, embracing agricultural and grazing lands which are well watered and of superior quality, and to much under cultivation in the southern and eastern sections.

There is a large and increasing demand for lands in the northwestern portion of the State, which will be increased by the early construction of a railroad through that section to the Black Hills.

Estimates for salaries and office expenses are as follows: For surveyor general, \$2,000; clerical force, \$6,300; rent, messenger, and incidentals, \$3,000; total, \$11,300.

Under the apportionments of appropriation for the year ending June 30, 1880, \$17,500, contracts for surveys amounting to \$15,500 have been made, leaving a balance uncontracted for of \$2,000.

11. *Nevada*.—For the year ending June 30, 1879, the sum of \$2,500 was paid for salary of surveyor general and \$2,998.62 for clerk hire out of the regular appropriation. The sum of \$1,558.34 was paid out of special deposits by the Central Pacific Railroad Company for surveys, and \$135.64 were paid out of the deposits by same company for office work.

Out of the appropriation for public surveys for the year ending June 30, 1879, the sum of \$10,352.93 was paid for work performed under contracts. Out of the appropriation for the year ending June 30, 1879, there were paid \$9,856.46. The number of acres surveyed during the year was 923,334.90, of which 28,719.87 acres were mineral lands, and the balance were agricultural and grazing lands. The number of miles surveyed was nineteen hundred. There were also surveyed ninety mineral claims, with an area of 1,091.85 acres, and one town site in Nevada, containing 227 acres.

The sum of \$2,955 was deposited for office work on mineral claims. Six hundred and ninety plats were made, of which four hundred and three were of mineral claims. The mineral productions for the past year have materially decreased, especially in and around the Comstock, owing to the "Bonanzas" and other mines awaiting the completion of the Sutro tunnel. The mining districts of Bodie and Lake, in California, near the State line, have not only attracted many miners, but large amounts of capital. The Sutro tunnel drain having been completed, various mines have recommenced operations. The agricultural out-



is cheerful, and the crops an average, notwithstanding the drought, &c., of the past two seasons.

The surveyor general desires an increase in the appropriation for contingent expenses from \$1,500 to \$2,500, so as to supply the office with needed stationery, books, &c., and he also asks an appropriation to liquidate deficiencies for office expenses now outstanding. The estimates for the surveying service in Nevada for the year ending June 30, 1881, are as follows: For surveys, \$23,500; for salaries, \$8,000; for incidentals, \$2,700.

12. *New Mexico.*—The surveyor general, under date of August 27, 1879, states that the public surveys made under the appropriation for the year ending June 30, 1878, not hitherto reported, amount to 220 miles run and marked at a cost of \$2,298.91; also twenty-seven private land claims surveyed out of the apportionment for year ending June 30, 1878, being incomplete at date of last annual report. The area of these claims is 4,536,750.05 acres; the number of miles run in surveying them was 1,400, at a cost of \$23,571.82.

Of the assignment of \$15,600 for survey of public lands during the year ending June 30, 1878, the sum of \$15,026.47 was expended; balance reverting, \$573.53. Amount of individual deposits, \$3,150; expended, \$2,946.24; refunded to depositors, \$203.76. Of the assignment of \$33,500 for the survey of private land claims, \$32,880.36 were expended; balance reverting, \$619.64. There were deposited for office work on public surveys for that year \$415, of which \$327.49 were paid out, and the remainder was refunded to the depositors.

For the year ending June 30, 1879, the amount apportioned for surveys of public lands was \$6,000, and for survey of private land claims \$8,000. The public surveys under the apportionment show 1,775 miles run and marked, the cost of which was not ascertained at the close of the fiscal year, owing to the late return of the work. Surveys were made in 28 townships, payable out of special deposits by settlers to the amount of \$6,155. Of this amount \$5,995.98 were paid out, leaving a balance of \$159.02. The sum of \$620 was deposited for office work, of which \$600.50 were paid out, leaving \$19.50 undrawn. The number of miles surveyed under special deposits was 969. The area of public lands surveyed during the year was 375,519.21, which added to 7,862,276.94, the amount previously surveyed, makes a total of 8,237,796.15 acres surveyed up to June 30, 1879. Three contracts for the survey of private land claims were made. Fifteen claims were surveyed, only part of which have been examined and platted. Nine mineral and mill site claims were surveyed. Deposits for office work were made in five cases only, amounting to \$200. Of this amount \$29.64 are reported as refundable to depositors.

Of the \$8,500 appropriated for salaries of surveyor general and his clerks, all was expended except 27 cents.

The appropriation of \$1,500 for contingent expenses, increased by receipts from subrent of office building to the extent of \$240, was expended, except \$4.20. The current work of the office has been pretty well kept up, but an increase in the clerical force of the office is asked for in order to bring up arrears of office work of several years' standing. Request is made for an appropriation to buy a safe for the deposit of valuable archives; also an appropriation of \$61.97 to pay for services of a messenger from April 28 to June 30, 1878. The reimbursement to deputy surveyors of \$1,500, expended by them in platting and transcribing their work outside the office, is recommended, the government having received the benefit of their work.

The estimates for the surveying service in New Mexico for the year

ending June 30, 1881, are as follows: For surveys of public lands, \$80; survey of private land claims, including office expenses, \$6,000; establishment of part of east boundary of New Mexico, \$1,725; for salaries, \$14,000; incidental expenses, \$5,500.

The public surveys for the year include the exteriors of a large number of townships, and the extension of the seventh correction line north and the fourth correction line south through several ranges. The survey of lands in the valleys of the San Juan River and tributaries to the northwest, the Dry Cimmaron and other streams in the north, the Pecos and tributaries in the southeast, and the lower Rio Grande, Gila, and their tributaries in the southwest sections of the Territory demanded by the settlers.

Attention is called to the Atlantic and Pacific Railroad grant, which has lapsed. The lands embraced therein should be restored to market.

Two new private land claims have been filed since last report, the testimony in eight cases completed, in six cases opinions of approval rendered, and two cases rejected. He renews the recommendation of last year that Congress fix a limitation of time for filing and presenting claims and that the courts be required to investigate and adjudicate the claims, but if the surveyor general is to be required to attend to such investigations he wants an attorney to represent the government. Any segregation of the private land claims from the public lands is necessary so that settlers may know upon what lands to enter.

Considerable progress in extending railroads is reported.

Nine copies of declaratory statements for desert claims on unsurveyed land were filed in the office during the year.

13. *Oregon*.—Under date of August 15, 1879, the surveyor general reports the completion of seven "special deposit" contracts, not closed at date of last annual report; cost of same, \$891.44; area surveyed by these contracts, 22,155.70 acres; distance marked, 97 miles.

For the year ending June 30, 1879, fourteen contracts were let payable from assignment of \$18,000, for the survey of agricultural lands. Under these contracts (eight of which have been completed) the surveyor returned and paid for amounts to \$6,520.73. The number of miles surveyed in the completed work is 630.

For the survey of timber lands there was apportioned to Oregon \$10,000. Out of this five contracts were made, only two of which had been completed at date of report. Under these two contracts there were run and marked 64 miles, at a cost of \$1,273.41. Twenty contracts were made during the year, payable from special deposits, amounting to \$2,600. Fifteen of these contracts have been completed at a cost of \$1,922.85. The number of miles run was 195.

Total number of plats made during the year, 270; total number of acres surveyed in the year, 393,196.17; additional area surveyed since last report, not heretofore reported, 243,809.47 acres. One mining claim was surveyed. The amount deposited for office work on surveys of public lands and survey of one mineral claim was \$390. The sum of \$396 was paid to clerks on special deposit account.

The \$7,000 appropriated for salaries of surveyor general and clerks was expended except \$4.40. There was paid for incidental expenses the sum of \$1,219.71, leaving a balance of \$280.29 unexpended of the appropriation of \$1,500.

The estimates for the year ending June 30, 1881, are \$38,510 for salaries, \$7,000 for salaries, and \$1,500 for incidental expenses.

The last year is reported to have been unusually unfavorable for surveying work, owing to dense smokes, fogs, and storms west of the Ca-



Mountains, and Indian hostilities and heavy storms in Eastern Oregon. For these reasons several contracts have been extended in time, and are yet unfinished.

The assignment of \$1,800 for survey of agricultural lands has been mostly used in response to requests of settlers for the survey of lands settled upon and as far as possible, in unsurveyed districts, which has necessitated small contracts.

The assignment of \$7,500 for survey of timber lands has been applied to survey tracts skirting the upper slopes of the Cascade Mountains, and the brakes and spurs of the Blue Mountains, tracts most likely to be depredated upon.

The amended deposit law of March 3, 1879, facilitates surveys needed by settlers. Recommendation is made that the law be further modified so that certificates should be received in payment for any public lands subject to cash entry.

In view of the increase of mining interests a corps of mineral surveyors has been appointed.

The surveyor general recommends that the instructions requiring deputies to come to the office of surveyor general to execute their contracts, and to bring their sureties with them to have the bond approved by him, be modified, so that the contract can be executed before and bond approved by the county officer where the surveyor resides.

14. *Utah.*—The area of public land surveyed during the year ending June 30, 1879, is 416,132.37 acres, of which 71,101.26 acres are returned as mineral and 3,641.32 acres as coal lands. Total area surveyed to June 30, 1879, in Utah, 8,594,952.34 acres. Surveys of agricultural lands during the year under contracts not closed at date of last annual report amounted to 1,186 miles.

The assignment of appropriation for the year was \$10,000, under which two contracts were made, and the work returned under these contracts and under contracts not closed at date of last annual report amounted to \$20,605.76. The number of miles run and marked in making these surveys was 2,044.

The appropriation of \$1,500 for incidental expenses was paid out except a balance of \$126.16 unexpended.

For salaries there were paid to the surveyor general \$2,750, and to the clerks \$2,996.45 out of the appropriation; balance of appropriation unexpended \$3.55.

The surveying contracts under the appropriation were mainly for standard parallels and guide meridians, to explore regions almost unknown, and to allow surveys to be made for increasing settlements. Lands along the fifth standard parallel south, west of Green River, consist to a great extent of coal lands, and being without water or timber are valueless for the present. Lands along the Colorado guide meridian are of an agricultural and grazing character, with extensive timber-lands of great value. Contracts have been made for the subdivision of these lands.

The surveys on account of individual deposits consisted principally of a resurvey of the Spanish Fork Indian Reservation, with numerous smaller surveys, amounting to 138 miles, at a cost of \$877.52. There is a balance of \$2,027.02 deposited for surveys of public lands, which is liable to pay for work now under contract.

The mining interest has revived very considerably. In the Uintah and Blue Ledge districts new discoveries have been made, promising to equal the famous "Ontario." In the West Mountain district a "gold

belt" has been discovered, about two miles in width, running east and west. There is great excitement and contest for claims.

The extension south of the Utah Southern Railroad will soon connect the San Francisco mining district, making accessible extensive silver beds and iron regions, and bringing nearer to market the silver of the Harrisburg mining district.

The increased number of mineral surveys has augmented the difficulties of surveying, owing to conflicting claims and errors of former surveys. One great difficulty is the inaccuracy of the relative location of mineral monuments. An appropriation for the purpose of confirming and establishing mineral monuments heretofore solicited is again made as an absolute necessity.

There were 35 mining districts at the close of the fiscal year, and the number is constantly increasing.

One hundred and nineteen mineral surveys were made during the year.

The following office work in connection with mining surveys was executed during the year: Maps, 390; connected mineral district maps, 10; Office work under appropriation: Maps of Utah Territory and Salt Lake City; 334 plats; transcripts of field notes, 131; descriptive lists, 16; Work under special deposits: Plats, 27; transcripts of field notes, 16; descriptive lists, 16.

Estimates for the surveying service during the year ending June 30, 1881, are as follows: For surveys, \$15,000; connecting mineral monuments, \$5,000; salaries of surveyor general and clerks, \$8,000; janitor, and incidentals, \$2,500; preparation of maps and field notes, \$1,000; 35 mining districts, showing the relative position of each claim, \$1,000.

The area of public lands disposed of during the fiscal year is as follows: Original and final homestead entries, 84,749 acres; cash, 13,025 acres; timber culture, 2,179 acres; desert land, first and second entries, 13,025 acres; mineral land, 728 acres; Supreme Court scrip, 400 acres.

15. *Washington.*—The surveyor general reports the completion of three contracts for surveys unfinished at date of last annual report. The amount paid for work done on the same was \$4,757.48; miles run, 1,988; and marked, 769; acres surveyed, 229,192.17; plats made, 43; balance of appropriation for the year ending June 30, 1878, unexpended, \$354.35.

For the year ending June 30, 1879, the apportionment or appropriation for surveys was \$18,000 for agricultural lands and \$7,500 for mineral lands exclusively. Twelve contracts were made under these appropriations, four of which have been completed. The amount paid for work done is \$13,786.34; balance applicable to unfinished contracts, \$11,713.66; number of miles run, 1,988; area surveyed during the year, 894,326.98, including the area of 229,192.17 acres surveyed under special appropriations and that surveyed under special deposits.

The amount of special deposits during the year was \$360 for work on public surveys and \$125 for office work. Under two contracts payable from special deposits there were paid out \$471.45, leaving an excess of \$394.55 over cost of survey.

The appropriation of \$6,500 for salaries of surveyor general and clerks was all expended. There was on hand at the beginning of the year \$62.88 on account of special deposits for office work, which, with the amount deposited during the year, made \$187.88 available for payment of salaries and hire. Of this sum there was paid but \$75, leaving unexpended \$112.88 of special deposits. The appropriation of \$1,500 for incidental expenses was all expended. The estimates for the surveying service for the



ending June 30, 1881, are as follows: For surveys, \$92,172; for salaries, \$10,500; for incidentals, \$2,000.

The annual map forwarded shows the progress of surveys and the boundaries of the recent Indian reservation for "Chief Moses" and his people.

The growth and prosperity of the Territory during the past year has fully realized expectations. While the lumber interest has been somewhat depressed, owing to stagnation in California markets, all other industries have been active. Grain growing in Eastern Washington has increased 33 per cent.

The surveyor general reports no desert land in the Territory within the meaning of the desert lands act. The yield of wheat on sage brush lands, without irrigation, averages from 40 to 60 bushels per acre.

The immediate necessity is shown of defining the eastern and southern boundaries of the Yakama Indian Reservation, as adjoining lands are in demand by white settlers.

16. *Wyoming*.—Three contracts were let from the apportionment of \$12,000 for public surveys during the year ending June 30, 1879. Two of these contracts were completed, and one partly finished, at a cost of \$0,841.06. Two contracts were let from special deposits. The amount paid for work on these contracts was \$1,080.54. Three contracts were let from the apportionment for the year ending June 30, 1880.

The amount paid for public surveys during the year was \$24,909.43, of which the sum of \$14,347.83 was paid out of the appropriation of March 3, 1877.

An unexpended balance of deposit for surveys by the Union Pacific Railroad Company is remaining, of \$290.47.

Forty-one townships were subdivided in the year; area of same, 918,810.90 acres, which added to 7,926,173.37 acres previously surveyed makes a total of 8,844,984.27 acres surveyed in the Territory, in 422 townships.

The surveys for the year amounted to 2,397 miles, and included the south, east and north boundaries of Fort Laramie Reservation, exteriors of 44 townships and subdivisions of 41 townships.

The area of coal lands reported is 4,495 acres; area of auriferous lands, 1,151 acres. Three gold mining claims were surveyed. The improvements on these claims are valued at \$39,500. The survey of another claim is in progress.

The office work in the year consisted of 41 township plats for the General Land Office, and the same number for the local office, also 82 descriptive lists to the latter office, and 9 plats of mineral claims and 3 transcripts of same. The original maps of these surveys were constructed in the surveyor general's office, and transcripts of the field notes were furnished to the General Land Office. Whole number of maps and plats made, 132; descriptive lists, 82; transcripts of notes, 44. Other miscellaneous office work was done, and the clerks worked nearly double time.

There was paid to surveyor general a salary of \$2,750. The appropriation of \$3,500 for salaries of clerks was all expended except 28 cents. There was expended for clerks on account of special deposit fund \$323.08.

The amount deposited to that fund during the year was \$190; amount on hand from former year, \$521.98, thus leaving a balance of \$338.90 unexpended June 30, 1879.

There were appropriated \$1,500 for incidental expenses, of which

\$322.83 remain unexpended and revert to the Treasury. The amount expended was \$1,177.17.

The estimates submitted for the year ending June 30, 1881, are as follows: For surveys, \$46,400; for salaries, \$10,500; for incidentals, \$1,000. The principal and the assistant draughtsman, and one transient clerk, have been discontinued on account of a deficiency in the appropriation for salaries.

The estimates for proposed surveys relate to lands in the valleys of the North Platte and its confluent, from Fort Laramie to Fort Fetterman, timber and mineral lands in and west of the Medicine Bow Mountains, and also additional surveys in Bear River Valley.

Stock raising has become important and lucrative, rendering the public lands more valuable than agricultural, especially in valleys where stock raising is the principal occupation.

*Comparative progress of surveys during five years last past.*—The following table exhibits the comparative progress of the surveys and disposal of public lands during the period of five years beginning with the 1st of July, 1874, and ending on the 30th June, 1879. It also shows the cost of the surveys in the field, including compensation to surveyors and their clerks and draughtsmen, and the incidental expenses of their operations, together with the number of the surveying and land districts.

*Progress of surveys and disposal of public lands during period of five years,*

Fiscal year ending June 30.	Surveying districts.	Land offices.	Cost of surveys, including salaries and contingent expenses.	Number of	
				Surveyed.	Disposed.
1875.....	17	97	\$1,036,180 24	26,077,351	7,000,000
1876.....	17	97	1,209,321 84	20,271,506	6,000,000
1877.....	17	99	550,054 03	10,847,082	4,000,000
1878.....	16	98	523,786 76	8,041,012	3,000,000
1879.....	16	93	525,707 09	8,455,781	9,000,000

#### *Special examinations of surveys.*

It is to be supposed that surveyors general, acting in accordance with instructions from this office, exercise due care in the selection of the persons with whom they contract for the execution of surveys. The returns of the surveys are examined by them and forwarded to this office for examination, approval, or rejection. The deputy surveyors are provided with the general instructions authorized by law, embraced in the well known as "The Manual," and special instructions adapted to the locality or peculiar circumstances which may attend the operations they propose to execute. When necessary, special instructions are accompanied by diagrams, illustrating the determinations of principal lines of public surveys with all the accuracy attainable upon the uneven surface of a spheroidal body like the earth, where computations based upon a given elevation above sea level cannot apply with accuracy to all cases of an ever changing surface upon the same degree of latitude. In all cases the instructions set forth in detail the manner in which lines should be established, marked, and witnessed for subsequent reference.

Notwithstanding these precautions it is often found necessary



sponse to charges or complaints filed by residents, to institute special examinations, testing the fidelity of adherence by sworn deputies to the letter of their obligations.

By order of the honorable Secretary of the Interior, the sum of \$30,000 was set apart from the appropriation for surveys for the fiscal year ending June 30, 1879, to be applied, if necessary, in defraying expenses of such examinations. The sum actually expended for service of this kind during the year amounted to \$14,367.96, resulting in 36 special examinations in States and Territories, as follows: Alabama (coal lands), 5; California (public lands and private claims), 22; Dakota (agricultural and mineral lands), 2; Illinois and Idaho (public lands), 1 each; Louisiana (private claims), 2; Montana (public lands), 2; Utah (public lands), 1. Of the foregoing, 9 related to surveys of private claims, 21 to agricultural and 6 to mineral lands. As a result of these examinations, four cases now await final action upon the question of approval or rejection. In the remaining cases the surveys have, in accordance with favorable reports of the examiners, met with approval.

Complaints or charges, where the ability or integrity of a deputy is involved, are subject to careful examination before they are accepted as authorizing an examination of his work. When made in malice or at the suggestion of opposing interests, without proper foundation, they cause unnecessary delay in adjustment and payment of accounts, resulting in serious vexation and loss of time and money upon the part of a public servant who may be totally undeserving of such treatment.

The tendency of existing low rates of compensation for surveys, especially those of timbered lands, is to discourage applications for contracts by many reliable and experienced surveyors, and to pave the way for the employment of deputies of less experience and integrity. To this is added the disadvantage that surveyors are usually not allowed to commence work upon their contracts at any date prior to the commencement of the fiscal year credited with the appropriation from which they are paid. This requirement results injuriously, especially in northern latitudes, causing a loss of from one-third to two-fifths of each surveying season, while the cost of equipment for the field is about the same as for a full term. In the face of these facts, surveying contracts are freely taken, and for reasons best known to deputies operating in certain localities, they would in all probability be as freely taken under a still further reduction of rates, while the difficulty in obtaining satisfactory surveys would be correspondingly enhanced.

Whatever views may be entertained on the question of advancing rates of payment for surveys, it appears that special examinations do not afford sufficient safeguard against imperfect and fraudulent surveys, as they give no assurance that the worst cases may not be overlooked. Under existing laws and regulations, the only remedy seems to lie in providing for prompt examination or inspection in the field of every survey of public lands that may be executed hereafter. To be satisfactory, inspections should be made at the time of the completion of the work embraced in any given contract or soon after. In cases where the execution of the contract is completed simultaneously with the close of a surveying season, inspection as now performed would necessarily be postponed until the following year, and payment upon such contracts would be correspondingly delayed. To obviate this difficulty, such methods of perfecting original surveys should be enforced as would confine the work of inspection simply to an examination of the manner in which the marks or monuments of the surveys have been established

or constructed. This accomplished, the cost of inspection may be reduced to a comparatively small sum.

Specifications, intended as supplementary to existing requirements, have been prepared, the enforcement of which it is believed will insure the desired accuracy in the performance of the fieldwork, and furnish to this office satisfactory evidence of faithful service.

Existing laws require that corners of the public surveys shall be marked by posts or stones, and where possible witnessed by reference to trees, rocks, &c. In many localities durable material cannot be procured; there are no trees or rocks; fires destroy the posts, and wind and rain storms obliterate the mounds and pits. In such cases the expense expended in surveys is almost a total loss; residents become weary of their applications for resurveys, local difficulties arise, and much correspondence relating thereto is rendered necessary.

Iron posts have been suggested as a substitute for the kind of marks now in use, but the cost of construction and transportation attending their establishment at all the corners of the public surveys is deemed too great. A post of this kind, however, has been designed by the office, strong and conspicuous, without excessive weight, which may be placed at certain corners on exterior and subdivisional lines, and furnish a permanent means of reference, from which the surveys of a township may be satisfactorily and economically restored by local surveyors in cases where all other landmarks have disappeared. This arrangement would call for the establishment of but nine iron-posts in each township to be disposed at alternate section corners.

#### *Survey of Calumet Lake.*

In February, 1876, applications supported by affidavits were made to the then commissioner of this office for a survey of the bed of Calumet Lake, in township 37 north, range 14 east, near the eastern boundary of Cook County, Illinois.

The affidavits related to the character of said lake and its bed, embodying the following allegations: that a great portion of the area covered by the public surveys, as a part or parts of the lake, is in a condition unsuitable for cultivation; that the lake is not navigable, and there is no navigable connection between it and other waters navigable or capable of being made so; that it is not of a fixed character, but is undergoing reduction by drainage and evaporation, and is rapidly filling up with vegetation; that it is not fed by springs or other source of perennial supply; that said lake is shallow, and that its whole area can be surveyed and the corners of all the sections and quarter sections fixed and established by an expert skillful surveyor.

Upon the aforesaid showing, a survey was authorized by this office, and it was subsequently executed by Alexander Walcott, esq. The results of the survey appeared in great measure to confirm the statements embraced in the affidavits which accompanied the applications for the survey, whereupon the latter was approved, and the usual steps were taken by this office for the disposal of the newly surveyed area as a portion of the public lands. These proceedings were opposed by parties owning land in close proximity to the lake. Among the papers filed by the opposers were a report of a hydrographic reconnaissance of Lake Calumet made at their instance by Capt. G. J. Lydecker, of United States Engineers, bearing date December 11, 1878, and ten affidavits of citizens dated January, 1879, furnishing evidence in direct conflict with the statements contained in the papers submitted by the applicants. A motion



also made by the opponents to vacate the order approving the survey above-mentioned. Upon consideration of this motion, action, relating to disposal of the area in controversy, was stayed. A cross-motion by the applicants for a resurvey was entertained, and a surveyor connected with this office was appointed with instructions—

To proceed and make in the presence of such of the parties as shall elect to attend thereupon, either in person or otherwise, a careful, accurate, and complete survey, report, and plat, showing the facts in relation to the matter in controversy, &c.

Following due notice to the parties in interest, the special examination was commenced May 20, 1879, and concluded in July following. The special examination involved the retracement of two separate public land surveys, made some forty years ago, which closed upon an Indian boundary or treaty line established in 1816, which latter crossed the lake in a diagonal direction. The area of the surface in controversy was found to be 2,680 acres. All lines of these old surveys, necessary to the restoration of the meander posts as originally established, were carefully retraced. Following this, and in obedience to instructions, a careful hydrographic survey of the lake was made, showing the condition of each portion of its surface corresponding to legal subdivisions of forty acres. This survey determined the present and mean depths of water at the corners of each of the aforesaid subdivisions. The work also necessarily embraced a hydrographic reconnaissance relating to the question of navigability of the aforementioned channel connecting the lake with Calumet River, and of the river and of a portion of Lake Michigan, in the immediate vicinity of Calumet harbor.

Upon completion of the field work the special examiner submitted a report, accompanied by map and field notes in detail. These papers are now before the office awaiting a time when the facts therein set forth can be duly considered.

#### *Survey of Cherokee lands in North Carolina.*

As will be seen by reference to my annual report for 1877 (p. 70), surveys were commenced in 1875 for the purpose of identifying, marking, and mapping the general boundaries and the numerous subdivisions of lands occupied or claimed by the Eastern Band of Cherokee Indians. This band, numbering about 2,000, of which about 1,500 are "full-blood" Indians, compose a remainder of the Cherokee Nation who chose to remain in North Carolina in preference to removing west of the Mississippi in the year 1838, the date at which the main body, as provided for by treaties of 1828, 1833, and 1835, emigrated to the country near that which is now occupied by them. The Eastern Band have since the date above mentioned remained in the same general locality, and by themselves or through other parties have been dealing in lands by descriptions and title-papers so obscure in their nature as to require tedious labors upon the part of a board of arbitrators to determine many important questions relating to their possessory rights.

Upon the appointment of the board of arbitrators it was agreed that the award made by them should be final and a rule of court, and to have effect from and after its approval by the judge of the United States circuit court, the Secretary of the Interior, the Commissioner of Indian Affairs, and the Department of Justice. The action of the board, bearing date October 23, 1874, having been thus approved, and the execution of certain deeds to the Indians in accordance with the requirements of the award having been accomplished, it became necessary, in order to place the Indians in undisputed possession of the lands therein desig-

nated, to define upon the face of the country and upon official diagrams and records the general boundaries and the subdivision lines of awarded lands, the value of which has been estimated at some \$200,000.

As stated in the above-mentioned annual report, this work of survey and identification was undertaken by Maj. S. Temple, under his contract of March 30, 1875, and prosecuted until the appropriations therefor came exhausted. The result of his labors were, 1st, the survey of the principal tract belonging to the Indians and known as the Qualla boundary, containing some 73,000 acres, and lying in the northeast part of Jackson and the southeast part of Swain Counties; 2d, the survey of the line of Jackson and Swain, so far as it related to the Qualla boundary; 3d, the retracement of the five township lines within the Qualla boundary; 4th, the establishment and permanent marking of the lines bounding the small subdivisions of the Qualla tract occupied by individual members of the band, and of such lots as have been set apart for public use. It was also found necessary to retrace the boundary of a tract known as the Cathcart survey, which lies within and now forms a part of the Qualla boundary. In addition to the above, the lines of a number of tracts scattered through the counties of Cherokee, Georgia, and Macon were run and marked, and to complete this work in a manner that their respective locations could be delineated upon diagrams and diagrams accompanying the returns, it was necessary to run a line starting from a known point on the Tennessee River and passing through the country in which the detached lots or tracts were situated in order that they might be connected therewith. The base line was run through a broken and mountainous country, and it was necessary to make it tortuous in its alignment. The linear extent of the surveys under this contract amounted to 815.07 miles, resulting in the survey and marking of 148 tracts, aggregating 9,934 acres, in the Qualla tract and lying within the limits of Swain County, and 332 tracts, amounting to 32,900 acres, in the same general tract, but lying in Jackson County. Elsewhere separate tracts, aggregating 8,318 acres, were surveyed and marked. These were distributed as follows: 20 tracts in Cherokee, 28 in Georgia, and 4 in Macon Counties. Voluminous field notes with separate diagrams of each lot in addition to the connected maps, were submitted to this office by the surveyor upon the completion of his unusual, arduous and perplexing labors, which, upon critical examination, were approved and became a part of the permanent records of the office.

Congress, by act March 3, 1877, appropriated a further sum of \$200,000 to provide for the completion of the surveys, and, as may be seen by reference to my last annual report, a second contract with this office was made in April, 1878, with Mr. Temple. The instructions accompanying this contract appear in the report last referred to. The field work under this contract was completed June 27, 1878. The returns embrace field notes and separate diagrams of 65 lots on the Qualla boundary. Diagrams accompany the same, showing all the lands surveyed in the counties of Graham and Cherokee, the tortuous base line run by the surveyor during this and the previous survey, and the lines connecting the individual lots and groups of lots with the base. Of the 65 lots surveyed under this contract, 33, having an aggregate area of 6,911 acres, lie in the county of Cherokee, and 32, embracing 5,115 acres, are in Graham. A diagram also accompanied the returns showing a survey of the Qualla boundary or tract was enlarged to the extent of 401 acres, independent of some additional land claimed by individual Indians, which was included in the said enlargement. The aggregate quantity



of land added to the Indian possessions by the survey of 1878 amounts to 12,658 acres. To accomplish this, it was necessary to run and mark 131.48 miles of tract boundaries, 14.94 miles of base line, 27.73 miles of connecting lines, and 1.6 miles of closing lines in the aforesaid enlargement of the Qualla tract—in all 175.75 miles. Of the surveyed tracts or lots shown in the returns of the surveyor, 28 are regarded as being lots called for or named in the award of the arbitrators; 16 lots so named, to which there seemed to be evidences of Indian title, remain unsurveyed, in consequence of service of notice upon the surveyor by whites owning or in possession of them forbidding survey of the same. Four of the above-named 28 lots are also claimed by whites, but notices forbidding survey were not served in time to prevent it. Owing to an observance of different systems of numbering and designating the tracts by the several parties through whom title has passed since their conveyance by the State of North Carolina, the work of identification of awarded lands has been a labor of exceeding difficulty.

The work accomplished under both of the contracts herein described amounts to 991 miles of surveys, determining and marking the lines of 63,588 acres of tribal and individual Indian lands.

#### *Resurvey of the Cattaraugus Indian Reservation.*

The Cattaraugus like the Allegany Indian Reservation is chiefly occupied and controlled by the Seneca Nation of Indians. Lying for the most part in Erie, its southern portion extends into Chautauqua and Cattaraugus Counties, in the State of New York. Its lines, with the exception of the eastern boundary, were surveyed and marked in the year 1798 by Augustus Porter. Many landmarks of the original survey have disappeared, and difficulties growing out of encroachments upon the lands of the Indians made a resurvey of the reservation a necessity. Congress, at the request of the Indians, authorized, by act of May 25, 1878, a resurvey of this tract, requiring—

The exterior boundaries thereof to be marked by stone or iron monuments, the expenses thereof not to exceed the sum of two thousand dollars, and to be paid by the Seneca Nation of Indians, who are authorized to select a surveyor, to be approved by the Secretary of the Interior.

The Seneca Nation having, by resolution of their council, designated Charles E. Fink as a suitable person to prosecute the resurvey, the choice was approved by the honorable Secretary, and a contract to that effect was entered into on July 6, 1878. Special instructions accompanied the contract, requiring and minutely describing various operations tending to the restoration and permanent marking of the lines and corners and faithful delineation of all important topographical features and improvements of the land. In order to facilitate future efforts to restore the boundary lines in case of loss, their precise angles of divergence were required to be taken by means independent of the magnetic meridian. The resurvey was commenced without unnecessary delay, resulting in the completion of the field work on the 26th of September, 1878. By careful observation the magnetic declination at the date and place of the resurvey was found to be  $3^{\circ} 20'$  W. Posts in mounds, numbered consecutively from the initial point of the survey and the resurvey, mark each mile of the boundary, and these are witnessed by pits, and wherever practicable by reference trees. The corners of the reservation are marked by hollow, octagonal, cast-iron posts, 4 feet long and of 5 inches diameter, with caps, and base flanges of 6 inches diameter. The posts are set to a depth of  $2\frac{1}{2}$  feet below the natural surface of the

ground, and their remaining parts are protected by conical mounds having 5 feet diameter of base. Their positions are further witnessed by pits and trees, as in the case of the mile posts. The sum of the boundary lines of the reservation is 36 miles 49½ chains, and the included area is 27,097 acres. Cattaraugus Creek, which flows to the east about 18 miles, has been meandered along both of its banks. In addition to the highways and other public improvements, the location of every dwelling is shown upon the maps returned by the survey, with name and symbol. Complete returns of the resurvey embracing the maps and field notes in triplicate were submitted to this office by the surveyor on November 30, 1878, which, upon examination, were approved. Copies were furnished, as required by law, to the clerk of Erie County and to the Seneca Nation.

The lands of the reservation are represented as being generally of the best quality. The improved portions aggregate about 18,000 acres, the remainder bearing timber of first and second growth. The quantity of waste land is small. The Indians are chiefly engaged in agricultural pursuits, many of them having large and well stocked farms upon which they have erected good and substantial dwellings. Annual fairs are held by the agricultural society of the nation. The inhabitants of Indian descent number as follows: Senecas, 1,435; Cayugas, 145; Onondagas, 40. The reservation is divided into ten school districts, and has been organized and provided for in the usual manner. The Tuscarora Asylum for orphan and destitute Indian children of the State of New York, erected at a cost of some \$20,000, is located on this reservation and is in part sustained by contributions of the Indians of the reservation. Religious societies have been formed, and the Presbyterian, Methodist and Baptist denominations have edifices in which services are held with regularity. An industrial school has also been established. Quarrels which grew out of encroachments upon the lands of the Indians have to have been settled by general acquiescence in the results of the survey. A considerable portion of the reservation is occupied by white settlers who claim possession under title from the Ogden Land Company. The areas of the sections in dispute are shown in dotted lines upon the map and referred to in the field notes.

#### *Old Cherokee Indian Reservation.*

This tract of land, formerly occupied by the Cherokee Nation, is situated in the central part of the State of Arkansas, and lies on the west side of the Arkansas River, in townships 7 and 8 north, range 2 west. Its boundary lines had been clearly defined while the Indians were in possession, and the lines of the public land surveys were closed there. Since the departure of the Cherokees, there have been repeated applications upon the part of settlers, and in their behalf, for subdivision of the lands into sections, in order that the lands might be disposed of, but pending the applications, until the passage of act of Congress of June 20, 1878, there has been no appropriation applicable to the survey of public lands in Arkansas.

This office has long looked upon the area embraced within the reservation as an unincumbered portion of the public domain, but in view of the fact that the treaty by which the lands of the reservation were returned to the United States contained certain stipulations, it was the best to address a letter of inquiry to the Commissioner of Indian Affairs concerning the right of the United States to survey and dispose of



lands in accordance with existing laws and regulations. This letter, dated June 1, 1877, referred to the treaty of 1828, by which the Cherokees ceded to the United States all the lands to which they are entitled in the State of Arkansas, and to a further provision of that treaty, that the property and improvements connected with the agency should be sold and the proceeds applied to aid in erecting in the country to which the Cherokees were about to remove a saw and grist mill for their use. The letter also called attention to the supplemental treaty of 1833, in which it was stipulated that eight patent railway corn mills were to be erected in lieu of the above mentioned grist and saw mills. Article 18 of the treaty of 1866 was also referred to, in which a provision occurs "that any lands owned by the Cherokees in the State of Arkansas and in States east of the Mississippi may be sold by the Cherokee Nation in such manner as their national council may prescribe," &c.

It appears that under this last-mentioned provision the Indians claim the right to dispose of the lands of the Old Cherokee Reservation. The letter of this office also invited attention to a report on this subject, made in 1866 by the Commissioner of Indian Affairs to the honorable Secretary of the Interior, and to our letters bearing date June 19, 1868, and May 25, 1869.

In response to the above communication, a letter was received from the honorable Secretary of the Interior bearing date June 27, 1878, transmitting a report of the Acting Commissioner of Indian Affairs, bearing date February 18, 1878, from which it is learned that the Indian authorities, in reply to his letter of inquiry addressed to them, concerning the basis of any claim they might have against the United States, asserted that the corn mills provided for in the treaty of 1833 had not been erected, and that consequently the government had failed to fulfill its obligation in that regard, while on the other hand the records of the government show strict compliance with that as well as other stipulations of the treaty. The Commissioner further says:

It seems clearly evident to this office that the Cherokee Indians, in the most plain, comprehensive, and emphatic terms, ceded to the United States all their lands in Arkansas—the intention and fact both concurring—and that the government has fully performed its reciprocal obligations growing out of such cession, and so cleared its title acquired thereby from any possible doubt as to its validity. But even if the government were in default in the full performance of its part of said agreement, such fact would not impair the validity of the cession. It could only, at most, give a claim to money compensation for non-fulfilled treaty obligations.

The Commissioner, referring to the above quoted eighteenth article of the treaty of 1866, shows that the Indians, having previously ceded all their lands in Arkansas, it cannot be made to sustain any claim to the reservation lands in question. This position is strengthened by quoting from article 31 of the same treaty, as follows:

All provisions of treaties heretofore ratified and in force, and not inconsistent with the provisions of this treaty, are hereby reaffirmed and declared to be in full force; and nothing herein shall be construed as an acknowledgment by the United States, or as a relinquishment by the Cherokee Nation, of any claims or demands under the guarantees of former treaties, except as herein expressly provided.

In transmitting the above communication, the letter of the honorable Secretary of the Interior concludes with the following remarks:

It will be seen from the report of the Commissioner of Indian Affairs, a copy of which is herewith inclosed for your information, that all the stipulations made with the Cherokees, upon the performance of which their right to the land in question was extinguished, have been fully complied with on the part of the United States. The history of the case is full and complete, and the treaties and acts of Congress bearing upon the matter at issue are cited in support of the right of the government to dispose

of the lands. I concur in the opinion of the Commissioner of Indian Affairs, and the subject is referred for the action of the General Land Office.

Subsequent to the receipt of the foregoing communications, in accordance with the views therein expressed, and with opinions entertained by this office, the lands have been treated as unincumbered property of the United States. Accordingly a contract was entered into September 14, 1878, payable out of the appropriation of June 20 of the same year, with James Potts, for the subdivision of the tract in question. The work has been completed in accordance with the contract and special instructions. The returns of the surveyor show the area of the reservation to be 3,343.41 acres, upon which there are now some 30 settlements, covering about 600 acres. Some of the lands have been occupied for a period of sixteen years. The settlers desire permission to occupy the lands occupied by them, subject to the ordinary regulations. The surveyor also reports the finding of landmarks of a subdivision survey of the reservation reported to have been made by authority of the so called "Confederate Government."

*Survey and subdivision of Red Cloud and Spotted Tail Reserves in Dakota*

Act of Congress, May 27, 1878, appropriated \$10,000 for the survey of such portions of the Sioux Indian Reservation in Dakota as may be required for agricultural purposes.

Act of June 20, 1878, authorized the honorable Secretary of the Interior to appoint a commission, consisting of three persons, to visit the Red Cloud and Spotted Tail Indians, to confer with them relative to their present location, with a view to their final settlement, where they can earn their support by agriculture and stock raising.

Act of March 3, 1879, appropriated \$10,000 for the survey of lands allotted to the Red Cloud and Spotted Tail bands of Sioux Indians in Dakota Territory.

Based on action upon the aforementioned authority, a commission appointed by the honorable Secretary visited Dakota, charged with the duties described in the act of June 20, 1878, and made report recommending the survey and subdivision of an area of country, bounded on the north and west by White Earth River, on the south by the boundary of Dakota, and embracing on the east the South Fork of White Earth River and tributary streams.

Treaty stipulations with the different tribes of Sioux provide for allotment of lands to any individual belonging to said tribes of Indians who may desire to engage in agricultural pursuits, said lands to be located in any country which may be occupied by the said Indians and their home. It has also provided that each head of a family might select not exceeding 320 acres of land, and each person over eighteen years of age, not being the head of a family, not exceeding 80 acres. The number of individuals belonging to the bands of Red Cloud and Spotted Tail has been estimated by the Commissioner of Indian Affairs at 3,000, requiring an area of subdivided lands equal to 24 townships.

In agreement with a suggestion of the Commissioner last named, the honorable Secretary directed that the lands intended for agricultural uses be subdivided into tracts of 40 acres. It was also directed that a contract should be entered into with Daniel G. Major, for the accomplishment of said survey and subdivision. In accordance with the foregoing, a contract was executed and special instructions relating to the details of the work were issued under date November 7, 1878. In anticipation of early application for allotments of agricultural lands, the



structions were so framed in conformity with the laws governing the survey of the public lands as to allow the largest portion of the limited appropriation then available, to be applied to the prosecution of the subdivisional surveys. The surveyor was required, while extending the guides, meridian, and standards parallel, to determine, by observation, localities best adapted to agricultural operations, and to establish thereon the intermediate corners from which to set off the smaller legal subdivisions.

The initial point of the survey is the intersection of the fourth guide meridian with the south boundary of Dakota, which is the northeast corner of fractional township 35 north, range 33 west, of the public land surveys of Nebraska.

Under the instructions, township lines which would embrace lands unsuitable for subdivision and allotment, in manner aforesaid, were not allowed to be run. It was also required that the usual practice in the disposal of excess or deficiency attending the closings of subdivisional surveys of the public lands should be adhered to, but that in all other cases the corners should be equidistant. The same regulations applied to the marking of corners for sixteenths of sections on the township lines, as have been herein described relative to the superior lines.

In marking corners upon all the lines, stones and pits were to be preferred to stakes or posts, and it was required that all stakes should be charred and surrounded by mounds and other evidences, in manner prescribed in the manual and supplement thereto. The surveyor was supplied with numerous diagrams illustrating the legal methods of projecting the various lines.

The areas of lands embraced within the limits of the two reservations suitable for subdivision and allotment can only be ascertained from the returns of the surveyor. As a consequence, the cost of a complete survey cannot as yet be accurately determined. The present estimates are as follows: 234 miles of standards parallel, at \$10, \$2,340; 106 miles of guides meridian, at \$10, \$1,060; 288 miles of township-lines, at \$7, \$2,016; and 4,320 miles of subdivisional lines, at \$6, \$25,920. Total estimated cost of the survey, \$31,336.

Under the second appropriation of \$10,000 mentioned herein, a subsequent contract bearing date May 13, 1879, was entered into with Mr. Major providing for further prosecution of the work under guidance of instructions previously issued. The surveys under these contracts have been in progress during the whole of the surveying season just closed.

#### *Survey of the Colorado and Utah boundary.*

By act of Congress of June 20, 1878, the sum of \$15,000 was appropriated for the survey of, and the establishment of monuments upon, the boundary line between the State of Colorado and the Territory of Utah. This work having been intrusted to Rollin J. Reeves, esq., surveyor and astronomer, a contract was entered into and full instructions relative to details of the work were issued to the surveyor under date July 26, 1878.

The boundary line consists of that portion of the thirty-second degree of longitude included between the thirty-seventh and forty-first parallel north latitude. The initial point of the survey is at the intersection of the aforesaid meridian with the thirty-seventh parallel, a point common also to the boundaries of New Mexico and Arizona. The monument is situated upon a mesa, which rises abruptly from the valley of the Rio San Juan, and it is 81.66 chains south of the south or left bank of that stream. It was established in 1875 by Chandler Robbins, esq., in the

survey of the New Mexico and Arizona boundary. From full directions furnished the surveyor, it was subsequently found and identified.

Among the requirements embodied in the instructions are the following:

Exercise of great care in the extension of the meridian and the employment of approved astronomical tests of alignment at the termination of each ten miles of the boundary, due corrections to be made thereat.

The line to be cleared of timber and brush wherever necessary, the timber at certain specified distances therefrom, to be blazed and marked in a particular manner.

The establishment of mile posts or stones of durable material, marked with consecutive numbers, counting from the initial point, with inscriptions indicating the State or Territory on either side of the line. Points, wherever such is practicable to be witnessed by pits and evidences required in the manual of instructions for the survey of public lands.

Except over stretches of country found to be totally impassable, distances on the boundary to be determined by chain measurement.

The establishment of permanent astronomical monuments at each distance of 50 miles from initial point.

The establishment of a permanent monument at the intersection of the line with the fortieth parallel, and one also upon the boundary 100 miles north of the same, to mark the northwest corner of the Ute Indian Reservation.

The use of new and approved field and astronomical instruments along the boundary line to be twice chained throughout, by different men.

Angular bearings to be taken to such natural and artificial objects as can be seen from the boundary, and principal topographical features along the line to be carefully sketched.

Barometrical observations to be taken at each mile post, and at conspicuous points of elevation or depression on the boundary.

The establishment of a durable and conspicuous monument at each terminal point of the survey.

Full and complete returns embracing field-notes describing the manner of determining the measurements and alignments, and of establishing each monument on the boundary accompanied by map and plan illustrating the topography of the country. The returns to be made in triplicate.

The surveying party took the field as soon as practicable after the execution of the contract, and devoted the remainder of the surveying season of 1878 to the work, reaching a point about two miles beyond the crossing of Grand River, 150 miles from the initial point of the survey. Operations were then necessarily suspended for the winter. Returns for the season's work, as required, have been made to this office, and have undergone careful scrutiny. The character of the country throughout the distance surveyed is mountainous and rocky, presenting a succession of peaks and ridges and deep cañons with steep slopes and high walls. The valleys are narrow, water scarce and difficult of access, the vegetation sparse. Varieties of the pine and cedar timbers in various stages of growth or decay were found upon the greater part of the 100 miles of the boundary. Upon the last 50 miles scrub oaks and deciduous trees were noted. The undergrowth consists mainly of juniper and sagebrush, greasewood and cactus. The rocky formations are of sand and limestone.



Ruins of habitations long abandoned, of which there is no reliable history, are found upon or near to many parts of the boundary. The most notable of these are to be seen east of and near the 28th mile post, consisting of a castle and tower and neighboring structures of less importance. They are constructed with double walls of limestone and mortar, and located in positions best suited to resist assault. They are usually rectangular in form, but in one case cylindrical.

Situated in Utah, near the 60th mile post, are the somewhat noted Rock Springs, the principal one of which is described as a natural rock tank, 30 by 6 feet, containing a constant supply of spring water 25 feet in depth, which overflows the sides of the basin.

The principal streams crossed were the San Juan, one mile from the initial point, the Dolores, near and north of the 121st mile post, and Grand River, between the 147th and 148th mile posts.

The country approaching the Dolores was extremely broken and mountainous in character, and regarded impassable, except by triangulation, for a distance of about 3 miles. A part of the line crossing the Rio Dolores and the cañons in its vicinity was so broken and precipitous that no suitable base for trigonometrical operations could be obtained, and the distance of nearly 11 miles of the boundary was determined astronomically. The valley of Grand River and its neighboring cañons were crossed by alternate chain measurements and triangulations.

The highest point noted in the record of barometrical observations is at the 103d mile post, where the elevation is shown to be 8,380 feet above sea level.

Work on the boundary was resumed by Mr. Reeves at the commencement of the surveying season just closed. As the surveyor has also the contract for the establishment of the north boundary of Wyoming, and operations thereon were commenced immediately upon the close of the former work, no opportunity has as yet been afforded him of preparing the official papers illustrating the closing portion of the Colorado and Utah boundary survey.

#### *Abstracts of decisions affecting surveys.*

*Cost of survey of private land claims, by whom paid.*—The appropriation act approved March 3, 1875, repealing the third section of the act of May 30, 1862, requiring the claimants of private grants to pay the cost of survey before receiving patents for the same, also repeals section 2400 Revised Statutes of 1874.

Such repeal does not relieve claimants from the obligation to pay for surveys made prior to March 3, 1875, where the patents have not been issued.

The provisions of the appropriation act of July 31, 1876, that patents shall not issue to private claimants until they pay the costs of the survey, should be considered as a general and permanent rule.

The act of July 31, 1876, has a prospective rather than a retroactive effect, and in relation to surveys made between March 3, 1875, and July 31, 1876, where patents have not issued, the claimants cannot be required to make payment for such surveys and platting.—(Secretary Schurz's decision, April 2, 1879.)

*Surveys, augmented rates, &c.*—Section 2405 Revised Statutes, authorizing the Commissioner to have surveys made of certain lands in California and Oregon at augmented rates, is in force.

No rates of surveys having been fixed in the appropriation for the next fiscal year, the Commissioner is authorized to establish

When surveys in California cannot be made at the rates fixed by the Commissioner, the surveyor general will, before making any contract, report to the Commissioner the character of the lands as ascertained by a thorough examination, the kind and character of difficulties to be overcome, and the reasons why such surveys should be made, for his consideration.

No survey should be made except at the minimum rates, unless for the most urgent reasons.—(Secretary Schurz's letter, June 16, 1879.)

*Survey of fractional townships 20, 21, 22, 23, 24, 25 north, 12 east, Mount Diablo meridian, California.*—The law fixes the extension of deficiencies which occur in any township to be on the west and north sides thereof, and when, therefore, in establishing standards for township exterior lines, townships are found but five miles in length, the law requires that the lines must be so located and marked that the deficiency will fall on the west part of the township, and sections 18, 19, 30, and 31 will be omitted, instead of the eastern tier of sections 1, 12, 13, 24, 25, and 36.

The law requires that section lines shall be surveyed from north and from east to west, and it is a violation thereof to reverse the order of procedure.

A deputy surveyor should not obey the instructions issued by the surveyor general if they are in violation of the law and regulations of the Secretary Schurz's decision, April 14, 1879.)

*Time of filing township plats in district land offices.*—The practice of forwarding the triplicate plat to the district land office before the triplicate plat has been received at the General Land Office, and the same of same communicated to the surveyor general, ordered discontinued, and hereafter the triplicate plat will be forwarded to the local office after notice to the surveyor general of the approval of the survey. The object of the order is to prevent complications of title, &c., which arise from entries of lands and subsequent cancellation of surveys by order of Commissioner General Land Office, April 17, 1879.)

*Advances of funds to surveyors general.*—The Secretary of the Interior decided on February 20, 1879, that advances of funds should be made to surveyors general on their requisition to enable them to pay the expenses of their offices monthly, instead of the quarterly payments practiced of late years by report from the General Land Office. This practice was therefore made to carry into effect this practice, which prevailed in former years, but had been discontinued for several years. The new mode of manner of payment went into effect July 1, 1879.

*Circular in relation to assignment of certificates of deposit on advances for surveys.*

By the act of Congress approved March 3, 1879, section 2401 of the Revised Statutes of the United States was so amended as to authorize the assignment of certificates of deposit by indorsement, such certificates to be received in payment for public lands entered under the pre-emption and homestead laws by settlers, and not otherwise.

The following circular instructions to surveyors general and receivers were issued under the law :



DEPARTMENT OF THE INTERIOR,  
GENERAL LAND OFFICE,  
Washington, D. C., June 27, 1879.

To Surveyors General, Registers, and Receivers:

GENTLEMEN: The act of Congress approved March 3, 1879, entitled "An act to amend section twenty-four hundred and three of the Revised Statutes of the United States in relation to deposits for surveys," necessitates some modifications in the previous instructions from this office on the subject.

The provisions of law governing such deposits are as follows:

"When the settlers in any township, not mineral, or reserved by government, desire a survey made of the same, under the authority of the surveyor general, and file an application therefor in writing, and deposit in a proper United States depository, to the credit of the United States, a sum sufficient to pay for such survey, together with all expenses incident thereto, without cost or claim for indemnity on the United States, it may be lawful for the surveyor general, under such instructions as may be given him by the Commissioner of the General Land Office, and in accordance with law, to survey such township and make return thereof to the general and proper local land office, provided the township so proposed to be surveyed is within the range of the regular progress of the public surveys embraced by existing standard lines or bases for the township and subdivisional surveys."—(Sec. 2401, U. S. Rev. Stats.)

"The deposit of money in a proper United States depository, under the provisions of the preceding section, shall be deemed an appropriation of the sums so deposited for the objects contemplated by that section, and the Secretary of the Treasury is authorized to cause the sums so deposited to be placed to the credit of the proper appropriations for the surveying service; but any excesses over and above the actual cost of the surveys, comprising all expenses incident thereto, for which they were severally deposited, shall be repaid to the depositors respectively."—(Sec. 2402, R. S.)

"Where settlers make deposits in accordance with the provisions of section twenty-four hundred and one, the amount so deposited shall go in part payment for their lands situated in the townships the surveying of which is paid for out of such deposits; or the certificates issued for such deposits may be assigned by indorsement, and be received in payment for any public lands of the United States entered by settlers under the pre-emption and homestead laws of the United States and not otherwise."—(Sec. 2403, Rev. Stats., as amended by act of March 3, 1879.)

The following regulations are prescribed to carry into effect the above provisions of law:

1. When one or more settlers on public lands shall apply to the surveyor general of the district within which such lands are situated for the survey of a particular township at his or their expense, that officer shall furnish to said applicant or applicants two separate estimates, one being the cost of the subdivisional survey of the surveyable portion of the entire township, and the other to cover the expense of platting the survey.

2. Settlers availing themselves of the provisions of section 2401, Revised Statutes, shall deposit with a United States designated depository, to the credit of the United States Treasurer, on account of surveying the public lands and clerk hire in the surveyor general's office, in the district in which their claims are situated, the sums estimated as aforesaid, as the cost of the field and office work.

3. The surveyor general will take precaution to estimate adequate sums, thereby preventing any deficiency in the payment of deputy surveyor, as well as for clerk hire involved in the service.

4. Where several settlers desire the survey of the same township, the necessary deposits to cover all expenses of the survey and platting may be so subdivided as to be proportionate to the amount of lands within the township claimed by each settler; this, however, is a matter to be regulated by parties applying for such surveys; but all applicants should be informed that the law makes no provision for the refunding of any excess of the deposit over the value of the lands taken. The excess, however, if any, over and above the actual cost of the survey in the field and office work, will be refunded as heretofore. When from any cause the certificate of deposit is not used, no provision of law exists for the repayment of any portion of the amount deposited, except as stated in paragraph 10.

5. No certificate of deposit can be received in payment by the receiver for more than the cost of the land at government price, and when the certificate is for more than that amount the receiver will indorse the amount for which it is received, and will charge the United States with that sum only, *not as cash*, but in the manner prescribed in the last paragraph of these instructions, and *not* with the sum named on the face of the certificate.

6. Under section 2403, as amended, certificates of deposit for surveys issued before or subsequent to March 3, 1879, may be assigned; such assignments must be acknowledged before the register or receiver, or some person duly commissioned to acknowledge legal instruments.

7. Assignees should distinctly understand that the face value of these certificates is not arbitrary; for instance, if the certificate calls for two hundred dollars, and an amount has been expended in the actual cost of survey and office work, and the assignee presents the same in payment for land amounting in value to less than the amount, it must be surrendered in full satisfaction for the same.

8. In cases where the estimated cost of survey and office work is in excess of two hundred dollars, the settler should be instructed to deposit in two or more installments, in order that no certificate may bear a face value of more than two hundred dollars.

9. The surveyor general in all cases will be careful to express upon the certificate the township plat the amount deposited by each individual, the cost of the survey in the field and office work, and the amount to be refunded in each case.

10. Before transmitting accounts for refunding the excess of deposits over the cost of survey in the field and office work the surveyor general will indorse the back of the triplicate certificate of deposit in the possession of the depositor in the following manner: "\$ ——— refunded to ———, by account transmitted to the Land Office with letter dated ———," and will state in the account the amount made such indorsement. Where the whole amount deposited is to be refunded, the surveyor general will require the depositor to surrender the triplicate certificate of deposit and transmit it to this office with the account.

No provision of law exists for refunding to other than the depositor.

11. In their monthly cash abstracts the register and receiver will designate the entries in which certificates of deposit are used, and the balances paid in cash, noting on the certificates of purchase and receipts the manner of payment received. The receiver in his monthly account current will debit the United States with the amount of such certificates, and in his quarterly accounts specify each entry made on such certificates, giving number, date, amount for which received, by whom and for what the deposit was made, and debit the United States with the same, which may be accompanied by his accounts as vouchers.

Very respectfully,

J. A. WILLIAMS  
Commissioner

The Division E, of this office, having charge of surveys and reports the work done for fiscal year ending June 30, 1879, as follows, viz:

Number of letters received .....	
Number of letters written .....	
Number of folio pages of record occupied .....	
Number of reports on adjusted accounts .....	
Number of folio pages of record occupied .....	
Amounts of adjusted and reported accounts .....	\$

1. Twenty-six special maps of States and Territories made, viz: Indiana, Illinois, Missouri, Arkansas, Iowa, Minnesota, Nebraska, Kansas, Louisiana, Mississippi, Alabama, Florida, Oregon, California, Nevada, Colorado, Indian Territory, Washington, Idaho, Montana, Wyoming, Dakota, Utah, Arizona, and New Mexico.

2. Volumes of field notes arranged according to States and Territories, particular bases, principal meridians, townships and ranges, and other easy reference—53.

3. Railroad maps constructed, with lateral limits indicated of land granted to different railroad companies, copies of same made, also tracings of railroad maps—101.

4. Exemplifications of plats, copies of town sites, tracings of land patents, and copies of same in record books, also other records prepared for applicants under act of Congress approved July 2, 1862 (461, Revised Statutes)—1,704.

In addition to the above, protractors of surveys have been made, calculated, and diagrams made of same, surveys of islands and other have been tested, and diagrams of same made, also 3,144 tracings of worn-out plats have been examined.

Unfinished work: 1. Arranging and indexing field notes and



28 field note diagrams forming the index volume; 3. 14 railroad volumes; 4. The tracing of the annual map of the United States, two-thirds of which has been completed.

#### DISPOSALS OF PUBLIC LANDS.

During the fiscal year ending June 30, 1879, the disposals of public lands amounted as above stated, to 9,333,383.29 acres. In this aggregate is included the sum of 622,513.96 acres of cash sales, this sum covering 165,996.53 acres of desert lands entered under the act of March 3, 1877, in addition to the area embraced in ordinary private sales for cash, under section 2354 of the Revised Statutes of the United States; in pre-emption entries paid for in money, under section 2259 Revised Statutes; in commutations of homestead entries to cash, under section 2301 Revised Statutes; and in various other classes of disposals for money under special laws, as of lands in certain abandoned military and Indian reservations. These figures show a falling off of 254,981.18 acres as compared with the previous fiscal year.

#### *Pre-emptions.*

In addition to cash sales and locations with military bounty land warrants, with agricultural college scrip, and with private land claim scrip, allowed pursuant to sections 2257 to 2287 Revised Statutes, and act of January 28, 1879, which contain provisions for the disposal of public lands to actual settlers to whom is given the preference right to purchase, on certain conditions, the tracts covered by their respective settlements, the pre-emptive principle is embodied in other enactments under which certain classes of public lands are held subject to entry, such as town sites under sections 2380 to 2394, and act of March 3, 1877. In reference to cases arising under the several laws referred to, the following is a statement of the work performed by the Pre-emption Division, G, during the year ending June 30, 1879:

Contested cases in the division undecided July 1, 1878.....	458
Contested cases in the division decided July 1, 1878.....	495
Total in division July 1, 1878.....	953
Received during year ending June 30, 1879.....	1,790
Total.....	2,773
Decided during the year.....	1,112
Closed during the year.....	1,122
Referred to other divisions.....	21
Total disposed of.....	1,143
In the division June 30, 1879, decided and undecided.....	1,630
Of these, 455 are decided and 1,145 are undecided.	
Ex parte entries in the division July 1, 1878, not acted on.....	2,050
Ex parte entries in the division July 1, 1878, suspended.....	1,062
Total in division July 1, 1878.....	3,132
Received during the year.....	4,254
Total.....	7,386
Approved during the year.....	3,726
Referred to other divisions.....	223
Total disposed of during the year.....	3,949
Total in the division July 30, 1879.....	3,437

Of these, 2,314 have not been acted on and 1,123 are suspended for various reasons. During the year ending June 30, 1879, 5,240 letters have been received; and 1,123 remain unanswered.

Number of letters written by the division.....  
 Number of pages recorded by the division.....  
 Number of pages copied by the division.....

The condition of the work in the division is about the same as one year ago. (Annual report 1878, page 28.) While the clerks to this division have generally performed their duties well, and worked diligently to accomplish a different result, the figures show a slight decrease in the amount of arrearages.

This office has already recommended the consolidation of the pre-emption and pre-emption laws. In addition to the cogent reasons which have heretofore been submitted in favor of the consolidation, it seems pertinent here to advert to the fact that claims originating under the respective laws are convertible, at the option of the parties. Under the original homestead law of May 20, 1862, and as now embodied in section 2289 of the Revised Statutes, a pre-emption settler had the right of transmuting his claim to a homestead entry, and under the act of March 27, 1878, he is entitled to the credit on his homestead entry of the time embraced in his pre-emption settlement. So, also, under the provisions of section 2301 of the Revised Statutes, the homestead entry is allowed at any time prior to the expiration of five years to be changed to his homestead entry to a cash entry, and obtain patent therefor from the government as in other cases directed by law, upon making the required settlement and cultivation as required in the pre-emption laws. It may also be stated that by the generous legislation of Congress in 1872 the time for the proofs and payments of pre-emption settlers has already been extended until large numbers of them have completed their claims, or held legal possession of them, for a period much longer than is allowed under the homestead law. This is the case in all that region of the public domain injured by grasshoppers, and when the extent of that injury is taken into consideration, the large number of parties claiming to be sufferers by reason thereof, and the number of parties claiming to be sufferers by reason thereof, a large number may be formed of the immense aggregation of that class of pre-emption settlers. It is reasonable to suppose that hundreds and thousands of the settlers have made valuable improvements on their lands, and under the decisions of the Supreme Court in the case of *Atherton vs. Fowler* and *Hosmer vs. Wallace*, it is somewhat a matter of speculation whether it will be the issue of their claims as respects the time of the adjustment of the pre-emption laws. The portion of the land which may be finally awarded to them.

It is therefore suggested, in view of these serious complications, that in order to simplify the process of acquiring homes on the public lands, that the legislation which has been so repeatedly asked for by the settlers should receive the careful consideration of Congress.

I deem it proper to refer more particularly in this place to the decisions of the United States Supreme Court in the cases of *Atherton vs. Fowler* (6 Otto, 513), and *Hosmer vs. Wallace* (7 Otto, 575), concerning the pre-emption laws. As contained in the Revised Statutes, they provide, among other things, as follows:

SEC. 2257. All lands belonging to the United States, to which the Indian title has been or may hereafter be extinguished, shall be subject to the right of pre-emption under the conditions, restrictions, and stipulations provided by law.

SEC. 2259. Every person, being the head of a family, or widow, or single person, over the age of twenty-one years, and a citizen of the United States, or having declared an intention to become such, as required by the naturalization laws, who has made, or hereafter makes, a settlement in person on the public lands

pre-emption, and who inhabits and improves the same, and who has erected or shall erect a dwelling thereon, is authorized to enter with the register of the land-office for the district in which such land lies, by legal subdivisions, any number of acres not exceeding one hundred and sixty, or a quarter section of land, to include the residence of such claimant, upon paying to the United States the minimum price of such land.

SEC. 2260. The following classes of persons, unless otherwise specially provided for by law, shall not acquire any right of pre-emption under the provisions of the preceding sections, to wit:

First. No person who is the proprietor of three hundred and twenty acres of land in any State or Territory.

Second. No person who quits or abandons his residence on his own land to reside on the public land in the same State or Territory.

SEC. 2264. When any person settles or improves a tract of land subject at the time of settlement to private entry, and intends to purchase the same under the preceding provisions of this chapter, he shall, within thirty days after the date of such settlement, file with the register of the proper district a written statement, describing the land settled upon, and declaring his intention to claim the same under the pre-emption laws; and he shall, moreover, within twelve months after the date of such settlement, make the proof, affidavit, and payment hereinbefore required. If he fails to file such written statement, or to make such affidavit, proof, and payment within the several periods named above, the tract of land so settled and improved shall be subject to the entry of any other purchaser.

SEC. 2265. Every claimant under the pre-emption law for land not yet proclaimed for sale is required to make known his claim in writing to the register of the proper land-office within three months from the time of the settlement, giving the designation of the tract and the time of settlement; otherwise his claim shall be forfeited and the tract awarded to the next settler, in the order of time, on the same tract of land, who has given such notice and otherwise complied with the conditions of the law.

SEC. 2266. In regard to the settlements which are authorized upon unsurveyed lands, the pre-emption claimant shall be in all cases required to file his declaratory statement within three months from the date of the receipt at the district land-office of the approved plat of the township embracing such pre-emption settlement.

SEC. 2267. All claimants of pre-emption rights, under the two preceding sections, shall, when no shorter time is prescribed by law, make the proper proof and payment for the land claimed within thirty months after the date prescribed therein, respectively, for filing their declaratory notices, has expired.

SEC. 2273. When two or more persons settle on the same tract of land, the right of pre-emption shall be in him who made the first settlement, provided such person conforms to the other provision of the law; and all questions as to the right of pre-emption arising between different settlers shall be determined by the register and receiver of the district within which the land is situated; and appeals from the decision of district officers, in cases of contest for the right of pre-emption, shall be made to the Commissioner of the General Land Office, whose decision shall be final, unless appeal therefrom be taken to the Secretary of the Interior.

Thus we have defined in explicit terms the lands which shall be subject to pre-emption, the personal qualifications required in a pre-emptor, and what shall constitute a disqualification, as well as the several requirements of the law to entitle a party to exercise the right with reference to the classes of offered and unoffered lands respectively, and the penalty attached to a non-compliance therewith; also the method of adjustment in case of conflicting pre-emption claims, and the original and appellate jurisdiction of the officers connected with the Department of the Interior charged with the adjudication of pre-emption cases.

In reference to the class of lands which, having been offered at public sale according to law, are subject to sale at ordinary private entry, the penalty prescribed by section 2264, above quoted, in case the settler fails to file or to prove up and pay for the land in time, is that the tract shall be subject to the entry of any other purchaser. This penalty has been enforced by the rulings of the department, and in this respect its rulings harmonize with the Supreme Court decisions referred to, as there is nothing in those decisions which holds that land subject to sale at private entry may not be purchased by any one desiring to do so, although



it be occupied and improved by another party, unless that party has a legal right of pre-emption.

In reference, however, to the class of lands which have not been claimed, and which therefore are not subject to private entry, the act prescribed by section 2265, above quoted, in case the settler complies with the legal requirements as therein given, is that the land shall be forfeited and the tract awarded to the next settler in the order of time on the same tract who has given such notice and otherwise complied with the conditions of the law." The decisions of the Supreme Court which have been mentioned are to the effect that no other person can do anything to acquire a pre-emption right as long as the settler party occupies and improves the land; and therefore the tract cannot be awarded to the next settler in the order of time, as provided for by the law, as the first settler chooses to occupy it with improvements thereon. In the Atherton-Fowler case the court held that "The right to make a settlement was to be exercised on unsettled land; to make improvements on unimproved land. To erect a dwelling-house did not mean to displace some other man's dwelling. It had reference to vacant land; to unimproved land." And again, in the Hosmer-Wallace case, the court declared that no act pertaining to the inception of pre-emption right could be done on land when it is occupied and used by others."

The principle laid down by the court in these decisions seems to recognize a right of occupancy of the public lands as against parties who wish to enjoy the benefits of the pre-emption laws in the way pointed out therein, without restriction as to the person occupying or the time of occupancy. A person although not possessing the qualifications prescribed in the pre-emption laws—a minor or a foreigner—one who may have already exhausted his pre-emption right, who is already the proprietor of 320 acres of land, who may have large possessions already acquired from the public domain by settlement or otherwise—may occupy the public land to an extent only limited by his desire or means of making the land an improvement, and there is no power to restrain or oust him, nor the power of the Executive to bring the land into market under the pre-emption laws, or the legislative power to make some other disposal of the land.

The present policy of the government is adverse to bringing the public lands into market to be disposed of in large quantities to parties who would buy for speculative purposes. It contemplates rather that the lands should be held by the government for gradual disposal as they are required for small farms by actual settlers. In providing a means for reaching this object, the pre-emption, homestead, and timber-culture laws have been enacted. As the decisions of the Supreme Court repeatedly show that the unoffered public lands may be taken up and held indefinitely by parties not seeking to acquire title under these laws, to the conclusion of those who do, I respectfully recommend that action be taken to bring the matter before Congress for legislation, with a view to regulating this right of occupancy in such manner as may be deemed expedient. It will perhaps be conceded that the merits of a settler already occupying public land, with valuable improvements thereon, should not be deprived of his home and improvements in favor of a stranger who may have acquired some technical advantage over him under the law, and that in such case the prior settler should be allowed the preference right to enter; but it is clear to my mind that this right should be made the subject of positive legislation, establishing and determining the proper limits of its enjoyment.

I desire also again to urge the recommendation contained in



annual report (page 29), that section 2262 of the Revised Statutes be so amended as to allow the pre-emption settler to make his personal affidavit before any officer residing in the vicinity of the land authorized to administer oaths, and whose official character is duly authenticated by the use of a seal or certificate.

It will be seen, therefore, that under existing statutes any qualified person can enter 160 acres of any of the vacant unappropriated public lands subject to homestead entry in the United States, with the above exceptions in Alabama and Mississippi, and further, that any *bona fide* settler who had been restricted to 80 acres of land in limits of railroad or military road land grants, being double minimum land, may enter a sufficient quantity additional to make up 160 acres; but there is no provision of law which relieves those homestead settlers who during the operation of the two year restricting clause in the act of June 21, 1866, made homestead entries of 80 acres *outside* of railroad limits of minimum land.

In view of the injustice of such discrimination, and for the sake of uniformity, I would respectfully recommend that the provisions of the acts of March 3 and July 1, 1879, be extended in such a manner as to allow those parties who made entries outside of railroad limits and who were restricted to 80 acres to enter additional land to make up the 160 acres; and also that the provisions of said acts be extended to Alabama and Mississippi.

The following is presented as a comparative statement of the disposals of public lands for cash and under the homestead and timber culture acts, and locations of agricultural college scrip, for the fiscal years ending June 30, 1875, June 30, 1876, June 30, 1877, June 30, 1878, and June 30, 1879, respectively:

	Cash.	Homestead and timber culture.	Agricultural college scrip.	Total.
	<i>Acres.</i>	<i>Acres.</i>	<i>Acres.</i>	<i>Acres.</i>
1875.....	745,061.30	2,820,927.84	9,432.02	3,575,421.16
1876.....	640,691.87	3,483,894.64	2,320.00	4,126,906.51
1877.....	740,696.57	2,098,771.56	1,280.00	3,440,738.13
1878.....	877,555.14	6,288,779.10	640.00	7,166,974.24
1879.....	622,573.66	8,026,685.22	960.00	8,650,219.18

Reference is made to the following decisions affecting homestead rights rendered since the date of the last annual report of this office:

1. The homestead entry of a party who, although he acted in good faith, failed to establish permanent and exclusive residence on the tract until three and one-half years after date of entry, should be held in abeyance until five years from the date of permanent settlement, and his case submitted to the board of equitable adjudication.—(Acting Commissioner's letter to register and receiver at Eau Claire, Wis., of September 3, 1878, case of Thorson Olsen.)

2. Where a deceased homestead claimant left a widow from whom he had been separated by written articles of agreement, it was decided that such widow was the proper party to make final proof, notwithstanding the fact that the deceased claimant willed all his estate, both real and personal, to his brother.—(Commissioner's letter to register and receiver at Salina, Kansas, of October 2, 1878, case of John Rhoades.)

3. In a case where a party applied to enter as a homestead a tract of land in California, settled upon by him prior to the survey thereof, which was found after survey to be a part of section 16, granted to the State for common schools, it was held that the construction given to sections 6 and 7, act of March 3, 1853, by the United States Supreme Court, where settlement and improvement are found to exist on a section at the time of survey, and properly proven, the right of the State in the land is gone and she is entitled to select other land in lieu thereof, but where the settler, being under no obligation to assert his claim, abandons it, the title of the State at once becomes absolute, as of the date of the survey, and the land is not left to be operated on by the acts of Congress. By the abandonment referred to is meant the settler's failure to assert his claim within a reasonable time by filing the notice thereof, or by failure to make proof and payment thereafter within the time prescribed by the statute. All such claims must be asserted under the *pre-emption* law and not under the homestead law.—(Commissioner's letter to register and receiver at Sacramento, Cal., October 1, 1878, case of *Mette vs. State of California*.)

4. A party having made an entry under the homestead law died before making final proof, leaving adult heirs: *Held*, that an administrator of the estate of the deceased should not be allowed to relinquish the homestead entry, but that a relinquishment to be accepted must be made by each and every one of the heirs.—(Commissioner's letter to register and receiver, San Francisco, Cal., December 8, 1877, affirmed by Secretary of the Interior November 6, 1878.)

5. The duly appointed guardian of the minor orphan child of a United States soldier who served for not less than ninety days in the Army during the rebellion may enter a homestead of 160 acres for the benefit of said minors, and the time of the father's service, or the term of his enlistment (not to exceed four years), if he were killed, shall be discharged for disability incurred in the line of duty, shall be deducted from the period of residence. The guardian or minors must continue to reside on the entered tract for at least one year.—(Commissioner's letter to register and receiver, San Francisco, Cal., November 9, 1878, to E. B. Robison, Smith Centre, Kans.)

6. In a case where a party made a pre-emption filing on a tract of land, and afterwards becoming *non compos mentis* made a homestead entry of the same land under the act of March 3, 1877, through a guardian, it was ordered that a pre-emption entry be allowed in the name of the incompetent party, upon the pre-emption proof furnished, the guardian to make the application to make such an entry, proffering the pre-emption proof therefor and making the proper pre-emption affidavit. The homestead entry was held for cancellation, the party being incompetent to swear to any *intention*, and the homestead law not providing for the making of a homestead entry by guardian for an adult.—(Commissioner's letter to register and receiver, San Francisco, Cal., November 14, 1878.)

7. It is no part of the duty of the registers and receivers of United States land offices to make out applications for homestead or pre-emption settlers.—(Commissioner's letter to Thomas C. Shapleigh, Duluth, Minn., December 2, 1878.)

8. The right to make an additional entry under section 2306, Homestead Statutes, attaches only in cases where the original entry was made prior to June 22, 1874, and embraced less than 160 acres.—(Commissioner's letter to J. J. Thomas, Parkersville, Kans., December 2, 1878.)

9. A party may make a homestead entry in his own name and receive a patent for the land, and, as "one of the heirs," may perfect an



made by his mother (soldier's widow), and he may apply his father's term of military service upon the settlement required if his mother had not remarried at the date of entry. Patent will issue "for the benefit of the heirs."—(Commissioner's letter to Charles Lee, Otsego Lake, Mich., December 5, 1878.)

10. A party who enters a homestead and attempts to acquire title thereto merely by going upon the land and remaining overnight once or twice in six months fails to establish the residence contemplated by the homestead law, and where it is shown that such failure to comply with the law was not the result of ignorance or of uncontrollable circumstances the entry should be canceled. Such cases as the above should not be submitted to the board of equitable adjudication. Cases going before this board are limited to those in which the *good faith* of the claimant appears unquestionable.—(Secretary's letter of December 5, 1878, case of *Byrne vs. Catlin*.)

11. The claimant's affidavit in soldiers' additional homestead entries under section 2306, Revised Statutes, may be made before a notary public or justice of the peace, where the claim has been *certified* to by the Commissioner of the General Land Office, as this office requires the necessary proof from the clerk of the court of the official capacity of such persons.—(Commissioner's letter to register and receiver, Yankton, Dak., Dec. 7, 1878.)

12. In cases where a homestead settler claims under an act passed subsequent to the swamp land grant of March 12, 1860, as against the State of Oregon, and where said lands have been listed by the State, but the lists have not been approved by the Secretary of the Interior, the State, in order to defeat the settler's right, must show by conclusive evidence that the tract claimed was swamp land at the date of the act of March 12, 1860.—(Secretary's letter of January 6, 1879, case of *Willard vs. State of Oregon*.)

13. In a case where the homestead party died, and his widow was convicted of his murder by poison, for which she was imprisoned in the penitentiary, pursuant to law, under a death sentence, it was decided that the administrator of the deceased party should make the final proof, and patent be issued in the name of his minor children.—(Commissioner's letter to register and receiver, Kirwin, Kans., February 4, 1879.)

14. In the case of a person *serving* in the Regular Army of the United States, who made application to enter a homestead under the provisions of section 2293, Revised Statutes, it was held that section 2293 of the Revised Statutes is practically inoperative and of no benefit to persons enlisted in the Regular Army since the close of the rebellion, inasmuch as it does not remove the restriction of the homestead laws requiring *actual personal residence* on the land, and that section 2308 has reference only to entries made by persons before or after enlistment into the service during the war of the rebellion, and whose rights were sacrificed by reason of their absence in said service; and that section 2308 was not intended to include persons who have served in the Regular Army since the close of the rebellion, and that such service cannot be construed as equivalent to actual residence on a tract of land.—(Secretary's letter of April 9, 1879, case of General Jeff. C. Davis.)

15. When a foreigner made an entry which was abandoned and canceled, and he subsequently made a second entry, having declared his intention to become a citizen: *Held*, that the second entry should be allowed to stand. In other words, an attempted entry by one who is not

qualified under the law must be treated as having no effect on legal rights when he becomes qualified to make an entry.—(See decision, case of Charles Root *vs.* Donald Smith, May 1, 1879.)

*Timber culture.*

During the last fiscal year entries of public lands have been made under the laws for the promotion of timber culture to the extent of 2,766,573.93 acres, which is an increase of 896,139.75 acres over the previous fiscal year. No patents have yet been issued for timber culture entries, nor can any be issued prior to March 13, 1882, as the period for which the cultivation of the timber must be kept up as a pre-condition to the issue of a patent will not expire in any case prior to said date, except, perhaps, in some case of a party claiming, as heir or legal representative of a deceased party, the patent for forty acres, under the section act of March 13, 1874.

Timber culture rulings have been made during the fiscal year as follows:

1. A party having instituted a contest to cancel a timber culture entry for non-compliance with the requirements of the act of March 3, 1873, failed to tender his application to enter the land in question on the day of instituting the contest, for the reason that the register told the claimant that *was not* the proper time to file application, but, as it was understood, the same should be filed at time of trial of contest. Where a claimant shows to the satisfaction of the land department that he was purposely misled by the local officer, such claimant's entry should not be prejudiced on that account.—(Secretary's letter to register of February 17, 1878, case of Wilson *vs.* Morrison and Danford.)

2. In case a timber culture entry is abandoned, the land covered by such entry is immediately subject to entry by another party under the timber culture or homestead laws, but the party applying must give the prescribed notice and the adverse party be allowed a hearing as in contested cases.—(Commissioner's letter to register and receiver of Kansas, November 1, 1878.)

3. A party made a timber culture entry of a tract of land, as required by law, but, through a misunderstanding as to its location, and after being found that the tract he had entered was unfit for timber culture, he was therefore asked to be allowed to change his entry so as to embrace an entirely different tract. *Held*, that it was incumbent upon the claimant to ascertain definitely the location, as well as the character of the tract before he entered it, and failing to do this he cannot be allowed to change or relinquish his entry simply because of his negligence. The cause the land does not prove to be what he expected.—(Secretary's letter of February 12, 1879, in case of Cornelius Mace.)

4. Where a party made a timber culture entry under the acts of March 3, 1873, and March 13, 1874 (prior to the enactment of the act of June 14, 1878), it was held that the entry might be consummated under the act of June 14, 1878, by showing, when making final proof, that the land growing upon his claim (of 160 acres) 6,750 thrifty trees upon more than 10 acres, the last named act being construed as requiring a certain amount rather than the number of acres of timber.—(Commissioner's letter to O. D. English, Sioux Falls, Dak., February 14, 1879.)

5. Where a party failed to break the requisite number of acres in making a contest was instituted, it was held that a *strict* compliance with the law must be shown, and that the contestant, in making an applica-



contest, and at the same time to enter the land in question, must be regarded as an *adverse claimant* whose appearance in the case precludes the sending of it to the Board of Equitable Adjudication for confirmation, even where a substantial compliance with the law may be shown.—(Commissioner's letter of March 4, 1879, to R. & R. Beatrice, Nebraska; *Gemmer vs. Chandler*. Affirmed by Secretary September 29, 1879).

6. The act of Congress approved June 14, 1878, permits persons who made timber culture entries under the provisions of the act of March 3, 1873, and March 13, 1874, to complete the same on compliance with requirements of its terms.—(Secretary's letter of March 17, 1879, case of *Holland vs. Martin*.)

7. In a number of cases where parties applied to make timber culture entries of land located in sections containing trees of various kinds, the applications were rejected upon the ground that there was sufficient timber in the several sections in which the tracts in question were situated to characterize them as timber lands. From this decision the parties appealed, and, upon consideration of the appeal it was held that the word "timber," as used in the act of June 14, 1878, is defined to mean that sort of "wood which is proper for buildings, or for tools, utensils, furniture, carriages, fences, ships, and the like," and that probably the true intention of the act was that the section of land in which an entry was made for the cultivation of timber should be naturally devoid of *timber* trees, such as pine, oak, ash, maple, elm, walnut, hickory, and other timber trees.—(Secretary's letter of September 12, 1879, case of *Nicholas Noel et al.*)

8. The following instructions to registers and receivers were embodied in a circular issued by this office August 21, 1878, viz: Do not allow a timber culture entry except you have satisfactory proof that the section embracing the land claimed is "prairie lands, or land naturally devoid of timber." Never allow a second timber culture entry in a section where there is already an uncanceled timber culture entry of a quarter of the same section. Remember that a party who contests a timber culture entry gains no preference right to enter the land unless he shall, at date of instituting the contest, file with you a written application to enter the tract upon cancellation of the contested entry. Remember that the affidavit required in making a timber culture entry must be acknowledged within the bounds of your land district. Return to the parties all such affidavits acknowledged outside of your district. The honorable Secretary of the Interior, under date of the 26th June, 1878, decided that a person could not change his timber culture entry to a homestead entry.

#### *Desert land entries.*

The entries of this class of lands under the desert land act of March 3, 1877, during the fiscal year ending June 30, 1879, reach the number of 530, embracing an aggregate area of 165,996.53 acres, being a decrease as to both the number of entries and aggregate area, as compared with the last fiscal year, of nearly fifty per cent.

Entries were made as follows, viz:

In California, 94 entries calling for 24,066.74 acres; Nevada, 123 entries, 28,244.77 acres; Oregon, 13 entries, 6,115.83 acres; Arizona, 43 entries, 14,777.31 acres; Dakota, 2 entries, 720 acres; Idaho, 18 entries, 4,592.09 acres; Montana, 33 entries, 38,902.54 acres; New Mexico, 25 entries, 6,670.52 acres; Utah, 74 entries, 12,865.25 acres; Washington, 7 entries, 2,440 acres; Wyoming, 93 entries, 26,601.48 acres.

*Fort Kearney Military Reservation.*

Information was given in the last annual report, page 51, concerning this reservation, which lies partly in the Grand Island and part in the Bloomington land districts, Nebraska, and which originally embraced a total area of 72,240.47 acres. After subtracting therefrom 36,426.51 acres, the contents of sections 16 and 36 falling to the State under a grant for common schools, there remained 68,432.96 acres, which were to be disposed of to actual settlers according to the provisions of the act of Congress of July 21, 1876 (19 Stats., pp. 94, 95). Of the 32,914 acres had been entered at the close of the fiscal year ending June 30, 1878. This left 35,518.96 acres. During the fiscal year ending June 30, 1879, there were entered 7,514.41 acres, and at that date there remained subject to disposal under the provisions of the act of July 21, 1876, 28,004.55 acres.

*Detroit arsenal grounds.*

It was stated in the last annual report, page 51, that 122 of the lots into which the Detroit arsenal grounds were subdivided—apart from the improvements, at \$50,065—were left unsold. Since the report was written, the sale having been adjourned from time to time, no more lots were sold at their appraised value of \$575, which, after deducting two others previously sold (appraised at \$510), but inadvertently omitted from former statements, makes the total number of lots sold 35, and yet to be sold, 118, appraised with improvements at \$48,980.

The district land officers at Detroit, Michigan, report that the result of the experiment having been made before the late shrinkage in real estate values was fully realized, is found to be too high, and that the remainder cannot be readily disposed of at the prices now established. They also express the opinion of the gentlemen who composed the board by whom the existing appraisement was made, as shown by a written communication from them.

In view of the fact that the continuance of the public sale of the lands under the act of Congress of March 3, 1875 (18 Stat., p. 13) has been attended with considerable expense, and has comparatively little result in the way of sales, I would respectfully recommend the passage of an act authorizing a reappraisement of the lots and improvements remaining unsold, and providing that, after the same shall have been sold at public sale, at the value thus established, any lots not then sold shall be subject to ordinary private entry at the appraised value.

*Pawnee Reservation in Nebraska.*

As was stated in the last annual report, page 52, the lands embraced in this reservation, comprising 278,837.20 acres, were brought into market at public offering, after survey and appraisement, pursuant to the act of Congress of April 10, 1876 (19 Stat., p. 28), during the period from July 15th to the 19th of July, 1878, both days inclusive, when 13,129.91 acres were sold. This sale left 265,707.91 acres subject to disposal under the provisions of that act. After the public offering and during the fiscal year ending June 30, 1879, 17,254.38 acres were disposed of at prices ranging from \$2.50 to \$6.00 per acre. At the close of the fiscal year, the area remaining subject to sale embraced 248,453.53 acres.

*Sac and Fox and Otoe and Missouri Indian Reservations in Kansas and Nebraska.*

Portions of the Sac and Fox and of the Otoe and Missouri Indian Reservations in Kansas and Nebraska, embracing 6,398.20 acres of the former, and 119,846.17 acres of the latter, were brought into market for sale to actual settlers only, at the district land office at Beatrice, Nebr., in quantities not exceeding 160 acres, at appraised prices, but subject to the minimum of \$2.50 per acre, under the act of Congress of August 15, 1876 (19 Stat., p. 208), as was stated in the last annual report, page 52, the terms of sale being one-third cash and the remainder in two annual payments, with interest at 6 per cent. During the fiscal year ending June 30, 1878, there were sold of the Sac and Fox lands 3,120.54 acres, and of the Otoe and Missouri lands 25,423.66. The sales were continued during the last fiscal year with the result that of Sac and Fox lands 2,398.14 acres were sold during the year, and of the Otoe and Missouri lands 37,777.20 acres. On the 30th June, 1879, the close of the year, there remained to be sold of the former 879.52 acres; of the latter 56,645.31.

The act of Congress of March 3, 1879 (20 Stat., pp. 471, 472), amends the act of 1876, above mentioned, in some particulars, providing, first, that the lands may be sold "to actual settlers or persons who shall make oath before the register or receiver of the land office at Beatrice, Nebr., that they intend to occupy the land for authority to purchase which they make application, and who shall within three months from the date of such application make a permanent settlement upon the same;" second, that fractional tracts containing a small area in excess of 160 acres may be entered; and, third, that the Secretary of the Interior may, in his discretion, allow additional time for making the deferred payments, not exceeding one year on each payment. Proper instructions have been issued to the district land officers for giving effect to these amendments.

*Indian lands in Kansas.*

In the annual report of this office for the fiscal year ending June 30, 1876, on pages 20 to 23 inclusive, and in the report for the fiscal year ending June 30, 1878, on pages 52, 53, and 141 to 144 inclusive, will be found a history of the various Indian lands in the State of Kansas.

Nothing has been done during the fiscal year ending June 30, 1879, relative to the "New York Indian Lands," the "Miami Lands," or the "Shawnee Absentee Lands," except in case of the latter, one entry of 80 acres having been allowed under the decision of the Acting Secretary of the Interior, of September 11, 1873, by a party who showed settlement and cultivation prior to the passage of the joint resolution of April 7, 1869. With regard to the said Shawnee Absentee Lands, I would respectfully call attention to my recommendation of last year, page 144, for proper legislation providing for the disposal of the vacant tracts thereof. No provision to that end having been made by Congress, I would renew the recommendation referred to, and I also recommend similar action in case of the New York Indian Lands and the Miami Lands, there having been but a few tracts of either class entered under the provisions of law for their disposal. Parties occupying these lands and others desiring to purchase them are constantly writing to this office for



information and asking to be allowed to enter the same, but in absence of Congressional action there is no authority for their disposal.

The following tabular statement shows the number of declarations filed, entries made, acres entered, and, in case of the Indian ceded lands, where payment is made by installments, the of receipts and certificates issued for the classes of Indian lands mentioned, in the State of Kansas, during the fiscal year ending 30, 1879.

Offices.	Cherokee strip.— Act of February 28, 1877.			Osage Indian ceded lands.—Act of August 11, 1876.							Osage Indian trust minished tract. Sec. 2283 Rev. St.		
	Entries.	Area.		Declaratory statements.	Entries.	Area.		Receipts.	Certificates.	Declaratory statements.	Entries.		
		Acres.	Haths.			Acres.	Haths.						
Independence...	57	4,875	64	91	126	15,939	00	1,187	401	319	184		
Wichita.....	293	25,360	69	.....	.....	.....	.....	.....	.....	2,052	1,158	1	
Larned.....	1	155	40	.....	.....	.....	.....	.....	.....	332	61		
Totals.....	261	30,400	73	91	126	15,939	00	1,187	401	2,703	1,403	2	

**Kansas Trust and Diminished Reserve Lands.**—During the fiscal year ending June 30, 1879, one receipt has been issued for the payment of the fifth installment in case of an entry on the "trust" lands made under the first section of the act of June 23, 1874, also one receipt for the payment of the fourth, and last, installment in case of an entry made under the second section of the said act on the "Trust and Diminished Reserve" lands, and one certificate has been issued (in the last name) so that at the present time there have been but four entries made under the said act, one under the first section and three under the second section.

Shortly prior to the close of the fiscal year this office was advised by the department of the reappraisal of the Kansas lands under the provisions of the act of July 5, 1876, and lists reported with instructions to this office to have the lands disposed of at the prices fixed thereby, in pursuance of the provisions of the act, with the exception, first, of the lands awarded to parties by the provisions for the entry of which, as contained in the first section of the act of July 5, 1876, required that the first installment should be paid on or before January 1, 1877; and, second, of such other lands as were entered under the second section of the act of June 23, 1874, the entries of which were not perfected. With regard to the lands excepted it is understood to be the design of the department to refer the matter to Congress for additional legislation.

In accordance with the above directions, this office, under date of June 9, 1879, issued a circular of instructions to the district officers of Topeka, Kans., for the disposal under the second section of the act of July 5, 1876, of the remainder of the "Trust and Diminished Reserve" lands to actual settlers on and after Monday, September 1, 1879, owing to delay in the printing of the circular and the proper preparation of the use of the district officers in the preparation of their returns in order to afford time for the settlers, after notice, to prepare for



payment for their lands, it was found proper to change the date first fixed upon for laying the lands open to entry, from Monday, September 1, the day first fixed upon, to Monday, November 3, 1879, and the district officers were advised of the date finally fixed upon by letter of the 13th of September last.

Due notice of the reopening of these lands to entry is now being given by publication in the Morris County Republican, published at Council Grove, Morris County, Kansas, and, from the large number of letters received from settlers on these lands and others interested in their purchase, it is thought that they will be disposed of rapidly after the date above given, as the new appraisement has fixed the price of the lands, in most instances, at a much lower rate per acre than formerly under the old appraisement.

*Cherokee Strip.*—As stated in my last report (pages 52 and 53) Congress passed an act on the 28th day of February, 1877, providing that the unsold portion of these lands, amounting to 295,577.84 acres, should be offered for sale at the proper district offices to settlers at \$1.25 per acre, and that the residue of said lands unsold after one year from the date of such offering should be sold by the Secretary at not less than \$1 per acre, in quantities or tracts not exceeding 160 acres.

The number of entries made and acres disposed of to settlers under the above act for the fiscal year ending June 30, 1878, were 39 entries and 5,189.44 acres, as will be found stated in my last report, page 53, and for the fiscal year ending June 30, 1879, 261 entries and 30,400.73 acres, as shown in the foregoing tabular statement.

The time for the entry of these lands by actual settlers having expired in the month of March of the present year, instructions were issued, pursuant to the provisions of the act, to the district officers at Independence, Wichita, and Larned, under date of March 31, 1879, to offer, after due advertisement, all of the unsold portion of these lands, amounting to 259,967.67 acres, at public sale to the highest bidder, but at not less than \$1 per acre, in tracts not exceeding 160 acres.

In accordance therewith the said lands were duly advertised and offered and sales effected, in the months of July and August, as shown by the following table:

Offices.	Date of offering.	Area sold.	Rate per acre.	Amount.
		<i>Acres.</i>		
Independence.....	August 13, 1879 ..	3,068.75	\$1 00	\$3,068 75
Wichita .....	August 13, 1879 ..	4,106.55	1 00	4,106 55
		80.00	1 50	120 00
Larned .....	July 14, 1879.....	673.02	1 00	673 02
Totals .....		7,928.32		7,968 32

The remainder of these lands, amounting to 252,039.35 acres, became subject to private entry, at \$1 per acre, at the close of the public offerings at the several district offices.

I add the following statement, showing the sales of Indian land amount received therefor during the fiscal year ending June 30,

Name.	Acres.
Cherokee school.....	80.07
Sioux.....	12,929.08
Sac and Fox.....	2,298.14
Otoe and Missouri.....	37,777.20
Pawnee.....	30,383.66
Osage ceded.....	15,939.00
Osage trust and diminished reserve.....	205,709.69
Cherokee strip.....	30,400.73
Winnebago.....	40.00
Shawnee absentee.....	80.00
Total.....	335,737.57

In the public lands division (C) of this office, which is charged with work relating to public lands after survey and not specially assigned to other divisions, there were received during the fiscal year ending June 30, 1879, 28,450 letters. The number of letters recorded, and mailed was 25,206, covering 12,671 record pages were cases of disposals of public lands requiring the issue of which were examined, approved, and put in course of patenting a number of 21,637. The number of cases that underwent preliminary examination, for noting any irregularities, and were posted in the books, was 141,563. Entries suspended for various causes were a proper to be confirmed, and submitted for the approval of the board under sections 2450 to 2457 of the Revised Statutes, as amended by the act of February 27, 1877, to the number of 515. In 505 cases the board approved the adjudication of this office that the entries should be confirmed, and in ten cases the board declined to approve, as indicated in abstracts appended to this report.

The duties of the discontinued district land offices in the States of Ohio, Indiana, and Illinois, for the disposal of any isolated tract of land may be found to be vacant within the limits of those States, and the completion of any unfinished business, keeping the records safe, and the giving information therefrom to parties interested in land titles, are performed upon the Commissioner under the act of Congress of March 3, 1878. The clerical work required is performed in this division. The duties of the division is to a great extent of a general and miscellaneous character, much of it not susceptible of description in a few words, and considerably in arrears, as was indicated in the last annual report, pages 53 and 54.

#### *Grants for railroads, wagon-roads, and canals.*

In July, 1872, a division was organized in this office to which were referred all questions growing out of the adjustment of railroad grants, canal, and other internal improvement grants.

The examination of settlers' claims in controversy with those of the railroad companies forms a large part of the business of this branch of the bureau.

The reports of construction of land-grant railroads during the fiscal year show an aggregate of 442.66 miles, which, taken with

previously reported (14,628.48 miles), make a total of 15,071.14 miles of such roads, distributed as follows:

States and Territories.	Miles.	States and Territories.	Miles.
Alabama.....	822	Florida.....	247
Arkansas.....	620. 16	Illinois.....	703. 72
California.....	1, 228. 89	Indian Territory.....	155
Colorado.....	298	Iowa.....	1, 672
Dakota.....	196	Kansas.....	1, 654
Louisiana.....	152	Oregon.....	227
Michigan.....	1, 005	Texas (where there are no United States lands).....	342. 87
Minnesota.....	2, 030. 50	Utah.....	255
Mississippi.....	406	Washington.....	106
Missouri.....	703	Wisconsin.....	553
Nebraska.....	832	Wyoming.....	400
Nevada.....	460	Total.....	15, 071. 14

During the fiscal year there were certified for railroad purposes 278,334.11 acres, showing a decrease as compared with the previous year of 328,006.54 acres. No certifications were made in favor of wagon-roads or canals.

Ten patents were issued, covering 77 pages of record, and five approved transcripts, covering 16 pages of record.

The lists of selections awaiting examination at the close of the fiscal year covered 1,250,573.77 acres.

In their appropriate place in this report will be found carefully prepared tables showing the condition of the adjustment of the various land grants at the close of the fiscal year.

The number of contested cases received from the organization of the division in 1872 to June 30, 1879, was 3,793, of which 2,311 had at the latter date received final action and been closed; 947 had been acted upon but not finally disposed of, and 535 remained on which no action whatever had been taken by the office.

Of *ex parte* cases, 6,387 were received up to the close of the fiscal year, 2,935 of which had at that time been finally acted upon and closed; 528 had received action, but yet remained open; and 2,924 had received no official attention save their entry upon the books of the division.

The number of letters received during the fiscal year was 5,001, and of letters written 5,212. The record of the latter covered 4,807 pages.

Since my last annual report many important decisions affecting railroad interests have been made both by the department and the Supreme Court.

In the case of *Yates vs. California and Oregon Railroad Company*, it was held that a pre-emption claim, though valid and subsisting at the time the grant to a railroad company took effect, which was afterwards abandoned, does not except the tract covered thereby from the operation of such grant, but the tract inures to the grant as of the date when it became effective.

In *Kniskern vs. Hastings and Dakota Railroad Company*, it was held, under the act of March 21, 1864, which relieved certain persons, then absent on duty in the military or naval service, from personal presence at the district land office, and authorized them to make the required affidavit before their commanding officer, and to appoint a representative to file their applications, that an entry made by a single man in the



military service who had not made *bona fide* improvement and settlement as required was illegal, and would not defeat a railroad attaching during the existence of such entry.

In *White vs. Hastings and Dakota Railroad Company*, it was held that a legal homestead entry subsisting to a tract of land at the time a grant *in presenti* to a railroad excepts the tract so entered from the grant notwithstanding the entry may have been canceled prior to the date when the grant attached. It was also held that a decision in accordance with rulings in force at the time renders the settlement of the controversy *res judicata* as between the parties in interest, and not conclude a third person from asserting a claim to the same land under modifications of former rulings and different circumstances. A title to the land has not been transferred.

In *Cox vs. Southern Pacific Railroad Company*, it was held that at the time the grant to the railroad became effective a pre-emption claim was valid and subsisting, and defeated the right of the company to the tract, his subsequent failure to perform the acts required by law is a question between such settler and the government only.

In *Serrano vs. Southern Pacific Railroad Company*, it was held that where the pre-emption settler had failed to perform the acts required by law and thereafter a railroad grant attached, the preference of purchase is forfeited, and the tract would inure to such grant.

The Supreme Court, at its late term (October, 1878), in *Ryan vs. Central Pacific Railroad Company*, declared that the right to the lands lost within the limits of a grant to a railroad attaches at the date of regular selection. The department, in *Blodgett vs. Central Pacific and Oregon Railroad Company*, followed that decision, and held that a withdrawal in favor of a company would protect the grant against the intervention of adverse claims initiated subsequent to such withdrawal.

In *Turner vs. Atchison, Topeka and Santa Fé Railroad Company* it was held that a pre-emption or homestead claim which was made in land within the limits of a railroad grant after the time when the grant took effect, even though prior to the time when the notice of withdrawal for the company was received at the district office, is not a pre-emption or homestead claim within the meaning of the selection of the act of April 21, 1876; and subsequent entries based on such pre-emption or homestead claims are not confirmed by said act.

In *Weber vs. Western Pacific Railroad Company*, it was held that to constitute a valid pre-emption claim within the intention of the selection of said act of April 21, 1876, the prior claimant must have possessed the requisite qualifications and have met the essential requirements of the laws under which he claimed.

In *Starkweather vs. Atchison, Topeka and Santa Fé Railroad Company* it was held that the rulings now in force can be applied to determine whether the prior claim was "valid" within the meaning of the second section of the act of April 21, 1876, aforesaid, notwithstanding such claim may have been, under former rulings, declared void.

In *Central Branch Union Pacific Railroad Company vs. Kansas Railway Company*, it was held that in cases where grants of land were made by the same act of Congress to two different companies, and the same conditions are imposed on each company, they are contemporaneous in origin, and the right of one company as respects the other does not depend upon priority of location or construction, but that the land lying within the overlapping limits of the two roads inure to the



It was also held that title does not pass from the government under a patent until it has been delivered to and accepted by the grantee.

In the matter of the Northern Pacific Railroad Company, it was held that the time within which the company is required to complete its road does not expire until July 4, 1880; that the only right reserved to the United States in case of a failure by the company to comply with the requirements of its charter is to "do any and all acts and things which may be needful and necessary to insure a speedy completion of said road," the grant to said company differing from most railroad grants in respect to the provisions for forfeiture in case the road is not built, and that a line of "general route," not being a "definite location," may be changed or amended by the company.

In *McGregor and Missouri River Railroad Company vs. Chicago, Milwaukee and Saint Paul Railway Company* it was held that the grant to the State of Iowa by act of May 12, 1864, vested an estate *in presenti*; that the disposal of lands is not restricted to the limits continuous with construction, being restricted by quantity and lateral limits only; and that the department is not necessarily called upon to decide upon rights declared by State legislation not in conflict with the granting act, as existing in the various companies having constructed the road.

*Readjustment of grants under decisions of Supreme Court.*—Under the decision of the Supreme Court in the case of the Leavenworth, Lawrence and Galveston Railroad Company *vs. The United States*, which established the principle that in railroad grants indemnity was not given for lands within the limits of the grant disposed of prior thereto, a readjustment of these grants was made necessary. Under the most favorable circumstances the progress of such work would be apparently slow, though proceeding with all the dispatch compatible with correctness, yet it has been unavoidably procrastinated and retarded by the smallness of the clerical force of the division.

In my last report the grants for the Hastings and Dakota, Wisconsin Central, California and Oregon, Saint Paul and Pacific, Saint Vincent Extension (constructed road only), Southern Pacific (main line), and Saint Joseph and Denver City Railroad companies were reported as having been carefully examined and the quantity of lands each company was entitled to under the decision ascertained. During the fiscal year ending June 30, 1879, no further examinations had been made, the limited clerical force of this branch of the office having been otherwise engaged. Since the last-named date, however, the grant for the Saint Paul and Pacific (Brainard Branch) Railroad Company has been carefully examined and the quantity it will receive under the decision referred to ascertained.

*Lands within railroad grants reserved for adjustment of foreign grant claims.*—The Supreme Court decision in the case of *Newhall vs. Sanger*, following the Osage ceded lands decisions, had particular reference to the attachment of railroad rights upon lands covered at the time of the railroad grant by a foreign grant claim, and settled the question adversely to the railroad company, holding that lands reserved for the adjustment of a foreign grant claim at the time of making the railroad grant did not pass under the latter, and, on their release from reservation by adjustment or rejection of the foreign grant claim, became a part of the public domain. This decision is of importance in the adjustment of railroad grants in the State of California, and will render necessary a great amount of careful work. Prior to its rendition the department had held that the railroad grant attached to such lands on their release from reservation, and under such construction thousands of acres were patented

to the companies, to which, under the beforementioned decision, were not entitled. Consequently each grant will have to be in connection with the foreign grant claims, and lists of lands and erroneously patented made up for appropriate action. It is stated in my last report that at that time the lands embraced in the grant only—the Manuel Diaz—had been ascertained and laid before the Secretary, and that another—the Moquelamos—was partially prepared. The latter has been completed and the matter referred to the Secretary, and suit thereon against the Western Pacific Railroad Company has, at the direction of the Attorney-General, been instituted.

The records of this office are not perfect enough to establish the titles of lands for the many foreign grant claims which, genuine or fraudulent, were presented and fought to a termination, successful or unsuccessful, after legal conflicts many years in duration. These can only be ascertained from the records of the surveyor general of California. Some extent to which these grant claims may or do conflict with the titles of grants may be formed from the statement that the confirmed and surveyed claims alone are 576 in number.

*Restoration of Missouri River, Fort Scott and Gulf Railroad.* By the act of March 3, 1877 (19 Stat., p. 404), part of the act of March 3, 1875 (18 Stat., p. 482), granting to the State of Kansas to aid in the construction of the Kansas and Neosho Valley Railroad was repealed, the company was to surrender of the lands not disposed of by it, and payment of money for those disposed of, was released from the obligations imposed by the act of March 3, 1875, and the lands surrendered were to be restored to market value by proclamation of the President, and opened to settlement and purchase under the homestead laws only. By proclamation of the President the lands affected, with the exception of a few tracts of doubtful status, which require future action, have been restored to entry under the homestead laws only.

*Restoration of lands in Iowa withdrawn for Mississippi and Missouri Railroad.*—An act approved June 15, 1878 (20 Stat., p. 133), providing for the restoration to settlement, under the pre-emption and homestead laws, of all vacant unappropriated lands heretofore withdrawn for the construction of the Mississippi and Missouri Railroad in Iowa, situated more than two miles from the amended line of route as located under the act approved March 3, 1875 (18 Stat., p. 482), and not including any lands embraced in the confirmed grants of January 31, 1873.

A complete list of all vacant lands affected by this act, embracing about five hundred acres, was prepared and forwarded to the land office, and the restoration will be effected in a short time.

*Right of way railroads.*—The number of railroad companies entitled to the benefits of the act of March 3, 1875 (18 Stat., p. 482), granting to the railroads the right of way over the public lands, is continually increasing, until, at present, the adjustment of their rights forms a large part of the work of this division. A table showing the railroads entitled to the benefits of the act will be found in another part of this report.

*Payment for surveys of railroad lands.*—The sundry civil appropriation act of July 31, 1876 (19 Stat., p. 121), contains the requirement that before any land granted to any railroad company by the United States shall be conveyed to such company, or any persons entitled to the land under any of the acts incorporating or relating to said company, such company is exempted by law from the payment of such cost.



shall first be paid into the Treasury of the United States the cost of surveying, selecting, and conveying the same by the said company or persons in interest." This enactment, buried in an appropriation bill, escaped notice until in 1878.

The question of exemption from payment of such costs was considered by the Secretary in the matter of the grant to the Southern Pacific Railroad Company and the grant to the State of Kansas for the Saint Joseph and Denver City Railroad Company. It was held that, in the adjustment of all railroad grants falling within the terms of the act, the requirements thereof must be met before certifications or patents can issue for lands granted to the company. The provisions of the statute were construed, however, as not applying to grants made to States to aid in the construction of railroads not named in the granting act; but where the grant is to a State in trust for the benefit of a company named, and the State is simply an intermediary and not a beneficiary, the payment required must be made.

*Pacific Railroad lands.*—In *Platt vs. Union Pacific Railroad Company*, decided at the October term, 1878, the Supreme Court of the United States declared that a mortgage constitutes a "disposal" within the meaning of the third section of the act of July 1, 1862, and that lands thus encumbered were not subject to pre-emption settlement and entry. Following said ruling the Secretary modified the decisions of the department in the case of *Dudymott vs. The Kansas Pacific Railroad Company*, and appropriate instructions have accordingly been issued.

*Railroad grants lapsed by reason of non-completion of roads.*—In my reports for the past two years I submitted a list of railroad grants which had expired by limitation, the roads for whose benefit they were made not having been constructed within the period prescribed by law, recommending that the attention of Congress be specially called to the subject, and that legislation be urged, looking either to the enforcement of the forfeiture of the grants, or extending the time for the completion of the roads. Various bills looking toward enforcement of the forfeiture have been introduced in Congress, but thus far no definite result has been reached. The recommendations on the subject are respectfully renewed, with the earnest hope that legislative action will be taken at an early day, either for the relief of the corporations or the restoration of the lands to market.

During the fiscal year just closed no grants have lapsed.

The Port Huron and Lake Michigan Railroad grant, heretofore reported as lapsed, is this year omitted from the list of such grants, Congress having by joint resolution of 3d of March, 1879, released to the State of Michigan any and all reversionary interest in the lands which the United States possessed. A list of the lapsed grants, carefully revised, will be found elsewhere in this report.

*Clerical force.*—This division has sorely felt the want of adequate clerical force during the past fiscal year. The many important changes in the rulings, readjustment of cases under the act of April 21, 1876, examinations necessary to give effect to the Newhall-Sanger decision, and the complications incident to the advanced adjustments of many of the railroad grants, with the rapidly increasing current work, have prevented a showing that might otherwise have been made.

While at present the clerical force is in better condition than for some years past, it is still inadequate to perform the work imposed upon the division. I submit in full the following decisions affecting railroad grants.

*Mineral lands.*

During the last fiscal year much excitement over alleged mineral discoveries (principally of argentiferous galena) has existed in certain sections of Arkansas, principally in Montgomery County, Camden district.

Several applications for appointment as deputy mineral surveyors have been made, and some have been acted upon favorably, it has been represented that a large number of mineral claims had been located, but were unsurveyed for want of such officers.

No estimate of the value of the discovery can be made from the knowledge possessed by this office. Representations have, however, been made which were sufficient to justify me in withdrawing certain townships from sale under the agricultural laws until their proper character should be determined by hearings duly advertised. The evidently increasing interest and vigor which have now for many years been centered in said locality would seem to indicate a possibility of large deposits in the mines.

It having been represented likewise that large deposits of coal existed in the Huntsville and Montgomery land districts in Alabama, a competent geologist was deputed to make an examination of the same therein, and his report, already submitted to you, shows the existence of large deposits of both coal and iron.

Most of the coalfields are so far removed from means of transportation, the expense necessarily attending their proper development is so large, and the available capital in that region so limited, that it is recommended that the lands be sold as agricultural only.

It is worthy of mention that in Missouri and Kansas all lands are subject to disposal only under the agricultural laws (act of May 3, 1854), while their situation and the comparative value of the deposits probably furnish no better arguments for the exception of their sale from the operation of the mineral laws than would those in Alabama.

It is also very probable that to withhold said lands in Alabama from sale, except as mineral, might postpone their disposition for a long period.

I respectfully recommend that the advisability of selling the mineral lands in Alabama in the same manner as now provided in case of the other States above named be favorably suggested to Congress.

*Swamp and overflowed lands.*

During the year just closed 478,462.27 acres of land have been surveyed and reported to this office under the acts of Congress granting swamp and overflowed lands to the several States, making the total area surveyed and reported under said acts 68,995,097.53 acres.

Lists embracing 44,712.57 acres have been formally approved by the Secretary, making the whole amount thus approved to 51,532,623.08 acres, of which 8,291,225.31 acres approved to the State of Louisiana pursuant to the provisions of the act of March 2, 1849, under which the approval has the force and effect of a patent.

Patents have issued under the act of September 28, 1850 (Revised Statutes, sections 2479, 2480, and 2481), for 75,388.08 acres, making the total number of acres patented under said act 39,483,547.39.

Under the act approved March 2, 1855 (Revised Statutes



2482), 419,534.11 acres have heretofore been patented in lieu of that amount of land located with military bounty land warrants or scrip.

The aggregate area definitely disposed of by approval under the act of 1849 and by patents under the other acts relating to swamp and overflowed lands, from the date of the passage of said acts to the end of the fiscal year, is 48,194,307.11 acres.

The following summary of the more important work connected with the adjustment of the grants above cited is submitted:

Number of letters received .....	958
Number of letters written .....	1,105
Pages of letter record covered .....	1,064
Number of lists prepared for approval .....	15
Certified copies of lists prepared and transmitted to the governors of the several States and the local land offices .....	31
Number of patents executed .....	7
Pages of patent record covered .....	30
Pages of swamp selection record covered .....	253
Number of contested cases decided .....	110
Number of tracts examined with the field notes of survey to determine their character .....	1,403
Number of tracts upon which claims for indemnity have been adjusted on testimony submitted .....	637
Certified copies prepared for individuals .....	9
Entries and locations held for cancellation for conflict with claims under the swamp grant .....	88

The correspondence has been kept up as far as possible, and quite a number of old cases have been finally disposed of.

Lists embracing a large area of more recent selections that have been in the office for some time have been noted on the records, and examinations have been made which will result in the final disposition of claims under the several swamp land grants for a large amount of land during the ensuing year.

New selections are being made and reported, and the work of adjusting claims for land selected many years ago has become more difficult with lapse of time. The number of contested cases is rapidly increasing. Claims for swamp land indemnity to a very large amount have been filed, and, in view of the arrangements for investigating such claims now determined upon, the adjustment of these cases will necessarily be delayed until an additional clerical force can be assigned to this division.

\* \* \* \* \*

#### *Adjustment of accounts.*

The Commissioner of the General Land Office is by law made the auditor of all public accounts relative to the public lands. The accounts and returns of registers and receivers, the accounts of receivers acting as disbursing agents, timber agents' accounts, State swamp land indemnity accounts, State fund accounts, and claims for the repayment of purchase money for lands erroneously sold, are received, examined, adjusted, and recorded in the division of accounts.

The returns of registers and receivers embrace all disposals of the public lands and of Indian trust lands at the several district land offices in the United States under the various laws authorizing the same. These returns are examined, verified, and registered in this division before distribution to the other divisions of the office. Instructions are also issued from this division to registers and receivers relative to the preparation and transmittal of such returns for the correction of

errors and upon numerous questions of detail which arise in connection therewith. Special inquiries relative to the disposal of the public lands and to other matters pertaining to the financial department of the public land administration are answered and explanatory tables are given in this division.

The general work of the division of accounts for the fiscal year ending June 30, 1879, may be thus summarized:

Letters received.....	.....
Letters written (covering 3,496 pages letter post).....	.....
Audited and adjusted and reported to the First Comptroller of the Treasury for final settlement:	
Quarterly accounts of receivers of public moneys.....	.....
Quarterly accounts of receivers acting as disbursing agents.....	.....
Timber agents' accounts.....	.....
State fund accounts.....	.....
State swamp land indemnity accounts.....	.....
Repayment accounts for lands erroneously sold.....	.....

The above accounts covered 2,002 pages folio post and 254 pages of the record of the reports on said accounts, together with the special statements and other written matter, embraced 2,656 pages.

Tabular statement No. 2, appended to this report, was prepared by the division of accounts, and represents a great amount of labor.

*State fund accounts.*—During the last fiscal year the State fund accounts finally adjusted, recorded, and stated to the First Comptroller of the Treasury embraced the following:

Alabama and Mississippi two, three, and five per cent. accounts for the years ending 31st December, 1860 and 1861.

Arkansas and Louisiana five per cent. accounts for the years ending 31st December, 1860 and 1861.

Colorado, Kansas, Minnesota, Michigan, Nebraska, Nevada, and Wisconsin five per cent. accounts for the fiscal year ending June 30, 1878.

The fund accounts of Alabama, Arkansas, Florida, Louisiana, Mississippi have been made up and stated to June 30, 1879, but in consequence of repayments on account of lands erroneously sold and the expenses incident to the sale of the public lands in the State being in excess of the gross receipts, against which both the repayments and the expenses are legally chargeable, nothing has accrued since December 31, 1861.

The two and three per cent. fund accounts of the State of Texas have also been examined up to June 30, 1879, but nothing has accrued to said State since December 31, 1874, to which date all accounts have been reported to the First Comptroller for settlement.

In the case of Iowa, the five per cent. account has been adjusted to December 31, 1873, since which date the repayments on account of lands erroneously sold and the expenses incident to the sales of public lands within said State have been in excess of the gross receipts, and nothing has accrued since the date alluded to.

*Repayments and changes of entry.*—At the termination of the fiscal year the unfinished business consisted of—

Repayment claims complete and awaiting adjustment.....	.....
Repayment claims incomplete and awaiting further evidence.....	.....
Applications for change of entry.....	.....

Much complaint exists in respect to the difficulty of obtaining relief under the existing law authorizing repayment in cases of lands sold at sales of the public lands. By the act of 1825 repayments were

to cases where there was a want of title on the part of the United States to the land attempted to be purchased. The act of 1859 (now section 2362 Revised Statutes) extended the remedy to embrace cases in which, from any cause, the sale could not be confirmed.

Under recent decisions governing the action of this office in the adjudication of repayment claims, it is held that the statute does not authorize repayments where the United States had, at the date of the attempted purchase, complete title to the land, though by reason of laches on the part of the purchaser, and error on the part of the land department officials, or both, the legal title has been transferred to some other claimant, and therefore cannot be conveyed to the original purchaser except through the action of the courts.

It is obvious that reasons other than that of a want of title in the United States may prevent the confirmation of a sale, since an entry may be erroneously initiated, or the proceedings may be subsequently voided in consequence of some non-compliance with the laws or regulations, or other error or neglect for which the purchaser may or may not be primarily responsible; and if a sale be made otherwise than in accordance with law, it is clear that it cannot legally be confirmed, notwithstanding the fact that the United States had title to the land which it could have conveyed had no valid objection intervened.

Cases may arise and have occurred where, though no statutory forfeiture was provided, a sound public policy would appear to justify this office in declining to recommend repayment. These are cases in which the entry is canceled because of some illegal act of the party in which fraud or an attempt at fraud is shown to have been an element. The discretionary power vested in the Secretary of the Interior, by which he is authorized to make repayments, would, however, seem to embrace all necessary authority for the proper protection of the public interests against fraudulent attempts to obtain title to the public lands without the necessity of punishing simple errors or merely technical informalities by a forfeiture of moneys innocently paid and for which the party has received no valuable consideration.

It would seem clear that where a party has, in good faith, paid his money for land which he cannot obtain, his money ought to be returned. The application to purchase and the payment to the land officers of the purchase money constitute a part of the contract of sale. If the United States, for any reason satisfactory to itself, does not perform its part of the contract by giving title to the land attempted to be purchased, it certainly should not take advantage of its own acts or of the fact of superior power to retain in its possession money to which it has no legal or equitable right.

Repayment claims are not in the nature of unascertained or questionable demands upon the Treasury. They are claims, not for the money of the United States, but for money improperly in the custody of the United States. It would seem that the law ought to provide for the return of such money to the parties to whom it legally and equitably belongs, without difficulty in the interpretation of the statute, and as speedily and with as little trouble and expense to the legitimate claimants as practicable.

Since the passage of the homestead and timber-culture laws and the adoption of the single and double minimum classification of the public lands, a class of cases has arisen the equities of which are beyond question, but which, not having been contemplated by the original acts authorizing repayments, are held not to be provided for under the terms



of the statute. These are cases in which an excessive price is for lands sold by improperly rating single minimum land as double minimum, or in which excessive fees or commissions are paid in homestead timber-culture, or other entries and locations, through similar error rating or other cause, for which the party making the purchase or location is in nowise at fault, but in which the error exists on the part of the United States.

I should fail in the discharge of my duty to the public, not in my appreciation of the dignity and good faith of the government. I did not earnestly urge upon the attention of Congress the need for additional legislation to provide for the palpably just relief which seems to be demanded in cases of this character.

*Transfers of title—Military bounty land warrants and scrips.*

By sections 458 and 459 Revised Statutes, it is made the duty of the recorder of the General Land Office to certify and affix the seal of the office to all patents for public lands, to attend to the correct recording, and transmission of such patents, which shall be in the name of the United States, be signed by the President, and countersigned by the recorder, and shall be recorded in the office, in which they shall be kept for the purpose.

In addition to the duties as above pointed out and imposed on the recorder is directed, in section 459, to "prepare such copies and simplifications of matters on file or recorded in the General Land Office as the Commissioner may from time to time direct."

Under office order dated July 2, 1878, the military bounty land warrant division, theretofore designated as letter H, was merged with the recorder's division, B; and as thus consolidated, the following was done in said division of the office during the fiscal year ending 30, 1879:

Number of letters received.....	
Number of letters written.....	
Number of pages recorded.....	
Certified copies furnished from patent records.....	
Cash received for copies under section 461 Revised Statutes.....	
Decrease as compared with previous year.....	

*Agricultural patents issued.*

Cash entries.....	
Military locations.....	
Agricultural college scrip locations.....	
Homesteads.....	
Chippewa half breed.....	
Sioux half breed.....	
Choctaw.....	

Total.....	
Increase over previous year.....	
Total patents issued by the office, including mineral, swamp, railroad, private grants.....	

*Number of patents transmitted.*

Cash.....	
Military.....	
Agricultural college scrip.....	

\* Soscov grant.



Homesteads.....	14,565
Chippewa half breed.....	34
Sioux half breed.....	3
Choctaw.....	1
Total.....	19,286
Excess transmitted over those issued.....	1,391

During the past year there were returned to this office as located 316 military bounty land warrants, issued under the acts of February 11, 1847, September 28, 1850, March 22, 1852, and March 3, 1855, calling for 50,820 acres; showing a reduction from the amount located with similar warrants during the previous year of 33,900 acres.

The following statement will show by States and Territories the locations therein during the time stated with military warrants under the above-named granting acts of 1847, 1850, 1852, and 1855:

	Acres.		Acres.
Arkansas.....	200	Mississippi.....	40
California.....	30,340	Missouri.....	120
Colorado.....	640	Nebraska.....	880
Dakota.....	6,680	Nevada.....	160
Florida.....	440	Oregon.....	320
Idaho.....	320	Washington.....	160
Kansas.....	5,320	Wisconsin.....	120
Louisiana.....	200		
Michigan.....	4,040	Total.....	50,820
Minnesota.....	840		

There are still outstanding and unlocated 22,805 warrants issued under the said bounty-land laws, aggregating 2,599,760 acres.

The work performed by the office under the said several bounty-land acts from the commencement of operations connected therewith to the present time will be found set forth in detail in tabular statement accompanying this report, which shows the total number of warrants issued, the amount of land embraced thereby, the whole number of warrants located upon corresponding areas of land, with number of unlocated warrants, and quantity of land required for their satisfaction.

As a summary, however, it may be stated that 551,057 warrants, calling for 61,007,670 acres, have been issued as bounties to the soldiers of the United States Army for services rendered in the wars prior to and exclusive of the recent rebellion, and that 528,252 warrants, appropriating 58,407,910 acres of the public lands, have been located, leaving a balance of warrants to the number and for the amounts above stated still outstanding and unsatisfied.

To show the extent to which land warrants have been issued as "bounties" for military services, it may be stated, by way of comparison, that it will require to satisfy those already out with those now located an amount of land in acres equal to all the New England States, together with nearly the entire State of Ohio added, and there has already been appropriated by the warrants now located and returned to this office an amount of the public domain exceeding by one million of acres all the New England States combined with the added territory of New Jersey, Delaware, and Maryland.

Of this vast number, 551,057, as stated, many are defective in various ways, principally in regard to the assignments. Several thousand—2,983 by actual count—are suspended at this time for this and other reasons, and during the past year a strong effort has been made to examine and dispose of this class of work, and, with the very limited force that could be placed upon it, 290 cases have been relieved and sent to

patent. Action, however, has been taken which it is hoped may lead to a large decrease of the number of these suspended cases during the coming year.

The many letters and applications received in this office asking for the issue of bounty-land warrants, induced me to promulgate the following circular:

DEPARTMENT OF THE INTERIOR,  
GENERAL LAND OFFICE,  
Washington, D. C., March 15, 1873.

To answer many inquiries made of this office, the information is given that all military bounty-land warrants under general laws are alone issued by the honorable Commissioner of Pensions, to whom all applications for that purpose should be made.

After location upon the public lands, such warrants are transmitted to the General Land Office, where the assignments or transfer thereof are examined, and where they are numerically filed, under each granting act.

Very respectfully,

J. A. WILLIAMSON,  
*Commissioner.*

Two warrants for 160 acres each granted under the act of July 21, 1842, for services in the war of 1812, which revived and continued in force for a limited period the original bounty law of May 6, 1812, have been located during the past year, leaving still outstanding ninety-six warrants under said act, aggregating 19,680 acres.

Six warrants for 40 acres each issued under the act of April 11, 1860, entitled "An act for the relief of the heirs of Charles Porterfield, deceased," have been located in the same time, leaving 54 warrants under said act for 40 acres each outstanding, embracing in all 2,160 acres.

In my last annual report attention was called to the fact that there were in this office 82 warrants issued under the act of February 11, 1847, which had been sent to the owners thereof, and having failed to reach their destination, were returned as "dead letters." Of this number four have been called for and claimed by the owners upon due and satisfactory proof of identity. Correspondence is now going forward that will no doubt result in the speedy delivery of many others to the original claimants, or to their heirs in case of the decease of the party named in the warrant.

Nine hundred and forty acres embraced in six certificates have been located with agricultural college scrip, issued under the act of July 2, 1862, and during the year 58 such locations have been adjusted and sent to patent. Of this number five were "duplicates," issued under the act of June 20, 1874, which provides that where agricultural college scrip has been "lost, canceled, or destroyed without the fault of the owner thereof," the same may be reissued. Such duplicates were substituted at this office in lieu of the originals for the locations made with the latter.

*Revolutionary bounty-land scrip.*—Under the acts of August 31, 1852, and June 22, 1860, Virginia military land warrants granted for services in the war of the Revolution calling for 3,406 acres have been satisfied by the issue of scrip in lieu of the same, and claims for 2,542 acres, founded on such warrants, have been presented since the last report. With these there are now pending under the laws referred to 311 claims, calling for 98,748 acres. Payment has been made in this class of scrip during the past year for 4,835 acres of the public lands.

Satisfaction of this class of warrant claims is necessarily of slow progress. They were required by law to have been "allowed" by the proper authorities of the State of Virginia prior to March 1, 1852, and the lapse of time, the many changes by death, assignments of individual rights, and other causes, make it very difficult to substantiate by legal proofs, as is required, the present proprietorship of the warrant granted.



All perfected claims of this class have been satisfied by the issue of such amounts of scrip as found due in each case.

*Virginia military district of Ohio.*—No change whatever has occurred in the condition of the entries and surveys in said district for the past year. It is expected that Congressional legislation will be had at an early day in relation thereto, providing for the survey of all outstanding entries made in said district, and for the satisfaction by patent of these and all other surveys therein, and disposing of all questions involved in the claim of the "Ohio Agricultural and Mechanical College" affecting said lands under the act of Congress of February 18, 1871, by which, upon certain conditions specified therein, all the unsurveyed and unsold lands in said district were ceded to the State of Ohio, and to which the said college succeeded by State legislation.

Since the preparation of my last report the number of clerks in this division engaged upon the work of writing and engrossing patents has been greatly reduced for the want of a sufficient appropriation to pay them.

For this reason the office has lost the services of many experienced clerks, and in consequence this branch of the work has fallen greatly in arrears. This is very unfortunate for the settlers who struggle with poverty and the many hardships incident to frontier life, and, after fulfilling the conditions imposed by the pre-emption, homestead, and other laws as to residence and cultivation, make their proof, and pay their money in the former case, whereby they become entitled to their patents, and the office should be enabled to prepare them without delay. The loss of a team by accident, the destruction of crops from any cause, floods this office with urgent appeals for the deed, that money may be raised with which to repair the accident or subsist the settler and his family until the new crop can be made available. Without the *patent* the settler is helpless in this emergency.

There are at this date over *ten thousand cases* on hand for patenting as soon as reached in regular order, which with the record in each case makes double the above number to write.

With the present force, it will take at least fourteen months to dispose of the work now on hand, and with the current cases coming from the hands of the bookkeepers the end can never be reached without an increase of the force engaged upon the work.

When patents are ready for delivery, they will in all cases be transmitted to the local office where the location or entry was made, and where they can be obtained by the party entitled thereto, upon surrender of the duplicate receipt, or certificate, as the case may be, unless the duplicate shall have been previously filed in this office with a request that the patent be delivered as desired by the person sending the same, and in no case will the patent be delivered either from this or the local office, except upon receipt of such duplicate, or, in case of its loss from any cause, upon the filing in lieu of the same of an affidavit made by the present *bona fide* owner of the land, accounting for the loss of the same, and also showing ownership of the tracts, or a portion thereof embraced in the patent. In case the duplicate has been duly assigned by the locator by a valid transfer in accordance with the laws governing transfers of realty in the State where the land is situated, such assignment will be recognized by this office and patent issued accordingly, provided the duplicate with the assignment thereon shall be filed in this office prior to the issuing of patent; but in no case will a patent be canceled for the purpose of making a reissue in the name of the assignee, where such assignment is not in possession of the office prior to date of the patent.

patent. Action, however, has been taken which it is hoped may lead to a large decrease of the number of these suspended cases during the coming year.

The many letters and applications received in this office asking for the issue of bounty-land warrants, induced me to promulgate the following circular:

DEPARTMENT OF THE INTERIOR,  
GENERAL LAND OFFICE,  
Washington, D. C., March 15, 1872.

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Six warrants for 40 acres each issued under the act of April 11, 1860, entitled "An act for the relief of the heirs of Charles Porterfield, deceased," have been located in the same time, leaving 54 warrants under said act for 40 acres each outstanding, embracing in all 2,160 acres.

In my last annual report attention was called to the fact that there were in this office 82 warrants issued under the act of February 11, 1847, which had been sent to the owners thereof, and having failed to reach their destination, were returned as "dead letters." Of this number four have been called for and claimed by the owners upon due and satisfactory proof of identity. Correspondence is now going forward that will no doubt result in the speedy delivery of many others to the original claimants, or to their heirs in case of the decease of the party named in the warrant.

Nine hundred and forty acres embraced in six certificates have been located with agricultural college scrip, issued under the act of July 2, 1862, and during the year 58 such locations have been adjusted and sent to patent. Of this number five were "duplicates," issued under the act of June 20, 1874, which provides that where agricultural college scrip has been "lost, canceled, or destroyed without the fault of the owner thereof," the same may be reissued. Such duplicates were substituted at this office in lieu of the originals for the locations made with the latter.

*Revolutionary bounty-land scrip.*—Under the acts of August 31, 1832, and June 22, 1860, Virginia military land warrants granted for services in the war of the Revolution calling for 3,406 acres have been satisfied by the issue of scrip in lieu of the same, and claims for 2,542 acres, founded on such warrants, have been presented since the last report. With these there are now pending under the laws referred to 311 claims, calling for 98,748 acres. Payment has been made in this class of scrip during the past year for 4,835 acres of the public lands.

Satisfaction of this class of warrant claims is necessarily of slow progress. They were required by law to have been "allowed" by the proper authorities of the State of Virginia prior to March 1, 1852, and the lapse of time, the many changes by death, assignments of individual rights, and other causes, make it very difficult to substantiate by legal proofs, as is required, the present proprietorship of the warrant granted.



All perfected claims of this class have been satisfied by the issue of such amounts of scrip as found due in each case.

*Virginia military district of Ohio.*—No change whatever has occurred in the condition of the entries and surveys in said district for the past year. It is expected that Congressional legislation will be had at an early day in relation thereto, providing for the survey of all outstanding entries made in said district, and for the satisfaction by patent of these and all other surveys therein, and disposing of all questions involved in the claim of the "Ohio Agricultural and Mechanical College" affecting said lands under the act of Congress of February 18, 1871, by which, upon certain conditions specified therein, all the unsurveyed and unsold lands in said district were ceded to the State of Ohio, and to which the said college succeeded by State legislation.

Since the preparation of my last report the number of clerks in this division engaged upon the work of writing and engrossing patents has been greatly reduced for the want of a sufficient appropriation to pay them.

For this reason the office has lost the services of many experienced clerks, and in consequence this branch of the work has fallen greatly in arrears. This is very unfortunate for the settlers who struggle with poverty and the many hardships incident to frontier life, and, after fulfilling the conditions imposed by the pre-emption, homestead, and other laws as to residence and cultivation, make their proof, and pay their money in the former case, whereby they become entitled to their patents, and the office should be enabled to prepare them without delay. The loss of a team by accident, the destruction of crops from any cause, floods this office with urgent appeals for the deed, that money may be raised with which to repair the accident or subsist the settler and his family until the new crop can be made available. Without the *patent* the settler is helpless in this emergency.

There are at this date over *ten thousand cases* on hand for patenting as soon as reached in regular order, which with the record in each case makes double the above number to write.

With the present force, it will take at least fourteen months to dispose of the work now on hand, and with the current cases coming from the hands of the bookkeepers the end can never be reached without an increase of the force engaged upon the work.

When patents are ready for delivery, they will in all cases be transmitted to the local office where the location or entry was made, and where they can be obtained by the party entitled thereto, upon surrender of the duplicate receipt, or certificate, as the case may be, unless the duplicate shall have been previously filed in this office with a request that the patent be delivered as desired by the person sending the same, and in no case will the patent be delivered either from this or the local office, except upon receipt of such duplicate, or, in case of its loss from any cause, upon the filing in lieu of the same of an affidavit made by the present *bona fide* owner of the land, accounting for the loss of the same, and also showing ownership of the tracts, or a portion thereof embraced in the patent. In case the duplicate has been duly assigned by the locator by a valid transfer in accordance with the laws governing transfers of realty in the State where the land is situated, such assignment will be recognized by this office and patent issued accordingly, provided the duplicate with the assignment thereon shall be filed in this office prior to the issuing of patent; but in no case will a patent be canceled for the purpose of making a reissue in the name of the assignee, where such assignment is not in possession of the office prior to date of the patent.

Transfers of this kind must in all cases be strictly in accordance with the law of the place, and if the assignor be a married man, and the statute requires the wife to join in the deed, it must be complied with, and in case of failure in this or other vital point the patent will follow strictly the recitals of the certificate and issue only in the name of the original purchaser.

The large accumulation of undelivered patents remaining on file in this office is being but slowly reduced under all the efforts put forth to place them in the hands of the patentees or the present owners of the land embraced therein, and I would again urge the necessity of an appropriation sufficient to complete the lists of the same, already well advanced before work was stopped, to be furnished the proper county officers, in the older States, with a view of bringing to the knowledge of parties in interest the fact that such patents remain in this office, and how they can be obtained.

The 7,000 volumes of patent records and 15,000,000 of certificates upon which patents are founded, and which form the groundwork of the title from the government in all cases, are properly cared for, and systematically arranged in cases and files where any book or paper of all this accumulation can be referred to at a moment's notice.

Attention is again called to the increasing demand upon the office, largely from this division, for certified copies from the records and papers, often causing great interruption of the current work, and it is urged that by proper legislation the money received for such copies, which is now by law turned into the United States Treasury, may be retained in this office for the purpose of employing a clerical force to perform such work.

#### TIMBER LANDS—TIMBER DEPREDATIONS.

In my annual report to you of last year, a brief statement was presented of the efforts that had been made, under the plan approved by the department, for the protection of timber growing upon the public lands, and in compliance with the rules and regulations of the department under the provisions of the several acts passed at the second session of the Forty-fifth Congress.

Since then there has been no further legislative action taken by Congress towards the suppression of timber depredations on the public lands, save as follows: In act of March 3, 1879, "To meet expenses of protecting timber on the public lands, forty thousand dollars, to be made available immediately." (Statutes, third session Forty-fifth Congress, p. 392.) Under this appropriation investigations of public timber trespass have been made, and efforts have been continued to suppress the depredations yet extensive, and which the interests of the government and of the people settling and residing in the region of the public timbered lands require should be still pursued with unremitting earnestness and vigor.

Special agents have been detailed to investigate trespass and collect testimony in the various public land States and Territories, and they have been transferred from one field to another as circumstances indicated they could best serve the public interests. They are now assigned to duty as follows:

In Alabama, one; California, one; Colorado, one; New Mexico, one; Florida, one; Louisiana, one; Michigan, one; Mississippi, one; Oregon, one; Minnesota and Wisconsin, four; Washington Territory, one; Wyoming Territory, one, the latter agent operating along the line of the Utah and Pacific Railroad.



Reports received from the agents, and from the registers and receivers, show somewhat of the great extent to which timber depredations have been and are still being committed, and the results attending the efforts which have been exerted towards suppressing the same.

In Alabama the suit instituted against the owners of a mill in Butler County, referred to in my last annual report, has been dismissed, said mill owners having made payment of \$4,024.11 in settlement of the trespass, and the amount having been covered into the United States Treasury.

Two agents have been operating in Alabama during the past fiscal year, and have reported many names of trespassers upon the public lands in that State, but many of these persons were employes of mill owners and timber speculators. Several iron and furnace companies have been committing extensive depredations upon public lands entered under the homestead law for the purpose of removing the timber therefrom, and not for improvement and cultivation. The timber taken from these lands was mostly burned into charcoal for use in the furnaces. These cases are now being thoroughly investigated, and civil and criminal proceedings are being instituted.

Trespass, covering several thousand acres of public land, by boxing the trees thereon for turpentine purposes, has been reported, and civil and criminal suits have been instituted against the parties.

Besides a number of persons arrested for trespass upon public timber and bound over to appear at the next term of the United States circuit court, fifteen persons have been tried for timber trespass, convicted, and sentenced to imprisonment for from ten to thirty days, with costs.

Several parties have been reported as operating along the line of the Mobile and Girard Railroad, stripping the land of its timber under cover of title from the railroad company and deeds by tax collector; these facts were duly reported to the governor of Alabama.

One thousand seven hundred and fifty logs taken from government lands were seized by writs of detinue and disposed of at marshal's sale for the sum of \$1,379.50.

Several propositions for compromise have been received, but no definite action has yet been taken.

In Arkansas the annual loss to the government by the destruction of valuable timber has been estimated at not less than \$500,000. The special agent has been circumscribed in his action by yellow fever and quarantine. Several names of trespassers have been reported by the agent; suits have been instituted against a number of persons held to bail for their appearance at the next term of the United States circuit court. Three parties plead guilty and were sentenced to fine and imprisonment. Many of the trespasses in this State are committed upon lands entered under the homestead law, the parties making entry evidently with no intention of complying with the requirements of said law, but for the sole purpose of denuding the land of its timber.

In California six parties who were indicted for trespass upon public timber lands have been relieved from further prosecution and liability therefor by paying into the court the sum of \$9,900, under the provisions of the act of Congress approved June 3, 1878.

In Colorado, under the operation of the act of Congress approved June 3, 1878, "authorizing the citizens of Colorado, Nevada, and the Territories to fell and remove timber on the public domain for mining and domestic purposes," large quantities of timber are reported taken from the public lands, whether unlawfully or not can only be determined by test cases, which will involve a construction of the scope of said act by the judiciary.

patent. Action, however, has been taken which it is hoped may lead to a large decrease of the number of these suspended cases during the coming year.

The many letters and applications received in this office asking for the issue of bounty-land warrants, induced me to promulgate the following circular:

DEPARTMENT OF THE INTERIOR,  
GENERAL LAND OFFICE,  
Washington, D. C., March 15,

To answer many inquiries made of this office, the information is given that bounty-land warrants under general laws are alone issued by the Commissioner of Pensions, to whom all applications for that purpose should be made.

After location upon the public lands, such warrants are transmitted to the General Land Office, where the assignments or transfer thereof are examined, and when approved are numerically filed, under each granting act.

Very respectfully,

J. A. WILLIAMSON,  
Commissioner.

Two warrants for 160 acres each granted under the act of July 1, 1842, for services in the war of 1812, which revived and continued in force for a limited period the original bounty law of May 6, 1811, have been located during the past year, leaving still outstanding nineteen warrants under said act, aggregating 19,680 acres.

Six warrants for 40 acres each issued under the act of April 11, 1842, entitled "An act for the relief of the heirs of Charles Porterfield," have been located in the same time, leaving 54 warrants outstanding under said act for 40 acres each outstanding, embracing in all 2,160 acres.

In my last annual report attention was called to the fact that of the warrants were in this office 82 warrants issued under the act of February 1, 1842, which had been sent to the owners thereof, and having failed to reach their destination, were returned as "dead letters." Of this number 10 have been called for and claimed by the owners upon due and satisfactory proof of identity. Correspondence is now going forward that will no doubt result in the speedy delivery of many others to the claimants, or to their heirs in case of the decease of the party in the warrant.

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Satisfaction of this class of warrant claims is necessarily of slow progress. They were required by law to have been "allowed" by the authorities of the State of Virginia prior to March 1, 1852, and through the lapse of time, the many changes by death, assignments of individual warrants, and other causes, make it very difficult to substantiate by legal evidence as is required, the present proprietorship of the warrant granted.



All perfected claims of this class have been satisfied by the issue of such amounts of scrip as found due in each case.

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Since the preparation of my last report the number of clerks in this division engaged upon the work of writing and engrossing patents has been greatly reduced for the want of a sufficient appropriation to pay them.

For this reason the office has lost the services of many experienced clerks, and in consequence this branch of the work has fallen greatly in arrears. This is very unfortunate for the settlers who struggle with poverty and the many hardships incident to frontier life, and, after fulfilling the conditions imposed by the pre-emption, homestead, and other laws as to residence and cultivation, make their proof, and pay their money in the former case, whereby they become entitled to their patents, and the office should be enabled to prepare them without delay. The loss of a team by accident, the destruction of crops from any cause, floods this office with urgent appeals for the deed, that money may be raised with which to repair the accident or subsist the settler and his family until the new crop can be made available. Without the *patent* the settler is helpless in this emergency.

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#### TIMBER LANDS—TIMBER DEPREDACTIONS.

In my annual report to you of last year, a brief statement was presented of the efforts that had been made, under the plan approved by the department, for the protection of timber growing upon the public lands, and in compliance with the rules and regulations of the department under the provisions of the several acts passed at the second session of the Forty-fifth Congress.

Since then there has been no further legislative action taken by Congress towards the suppression of timber depredations on the public lands, save as follows: In act of March 3, 1879, "To meet expenses of protecting timber on the public lands, forty thousand dollars, to be available immediately." (Statutes, third session Forty-fifth Congress, 392.) Under this appropriation investigations of public timber trespasses have been made, and efforts have been continued to suppress the depredations yet extensive, and which the interests of the government and the people settling and residing in the region of the public timber lands require should be still pursued with unremitting earnestness and vigor.

Special agents have been detailed to investigate trespass and to take testimony in the various public land States and Territories, and have been transferred from one field to another as circumstances indicated they could best serve the public interests. They are now assigned to duty as follows:

In Alabama, one; California, one; Colorado, one; New Mexico, one; Florida, one; Louisiana, one; Michigan, one; Mississippi, one; Oregon, one; Minnesota and Wisconsin, four; Washington Territory, one; Oregon Territory, one, the latter agent operating along the line of the Utah and Pacific Railroad.



Reports received from the agents, and from the registers and receivers, show somewhat of the great extent to which timber depredations have been and are still being committed, and the results attending the efforts which have been exerted towards suppressing the same.

In Alabama the suit instituted against the owners of a mill in Butler County, referred to in my last annual report, has been dismissed, said mill owners having made payment of \$4,024.11 in settlement of the trespass, and the amount having been covered into the United States Treasury.

Two agents have been operating in Alabama during the past fiscal year, and have reported many names of trespassers upon the public lands in that State, but many of these persons were employes of mill owners and timber speculators. Several iron and furnace companies have been committing extensive depredations upon public lands entered under the homestead law for the purpose of removing the timber therefrom, and not for improvement and cultivation. The timber taken from these lands was mostly burned into charcoal for use in the furnaces. These cases are now being thoroughly investigated, and civil and criminal proceedings are being instituted.

Trespass, covering several thousand acres of public land, by boxing the trees thereon for turpentine purposes, has been reported, and civil and criminal suits have been instituted against the parties.

Besides a number of persons arrested for trespass upon public timber and bound over to appear at the next term of the United States circuit court, fifteen persons have been tried for timber trespass, convicted, and sentenced to imprisonment for from ten to thirty days, with costs.

Several parties have been reported as operating along the line of the Mobile and Girard Railroad, stripping the land of its timber under cover of title from the railroad company and deeds by tax collector; these facts were duly reported to the governor of Alabama.

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In Arkansas the annual loss to the government by the destruction of valuable timber has been estimated at not less than \$500,000. The special agent has been circumscribed in his action by yellow fever and quarantine. Several names of trespassers have been reported by the agent; suits have been instituted against a number of persons held to bail for their appearance at the next term of the United States circuit court. Three parties plead guilty and were sentenced to fine and imprisonment. Many of the trespasses in this State are committed upon lands entered under the homestead law, the parties making entry evidently with no intention of complying with the requirements of said law, but for the sole purpose of denuding the land of its timber.

In California six parties who were indicted for trespass upon public timber lands have been relieved from further prosecution and liability therefor by paying into the court the sum of \$9,900, under the provisions of the act of Congress approved June 3, 1878.

In Colorado, under the operation of the act of Congress approved June 3, 1878, "authorizing the citizens of Colorado, Nevada, and the Territories to fell and remove timber on the public domain for mining and domestic purposes," large quantities of timber are reported taken from the public lands, whether unlawfully or not can only be determined by test cases, which will involve a construction of the scope of said act by the judiciary.

In Dakota trespass cases have been reported involving about 2, feet of timber. A few persons have been tried, found guilty, and The course taken by the department toward suppressing timber depredations, except in some few localities, seems to be generally approved in the Territory.

In Florida the cases mentioned in my last annual report are still pending in the United States court. Many new cases of trespass have been reported, involving 62,650,000 feet of timber. Suits have been instituted in which bonds have been given amounting to \$63,400, and the cases continued until the next term of court.

Most of the trespasses in this State are directly or indirectly committed by a few leading mill owners and log speculators, and partly upon lands entered under the homestead law by their employes, for whom they pay entry fees and other incidental expenses. Some difficulty in procuring evidence and bringing suit in certain cases has arisen from the residence of the trespasser being in Florida, while the public timber lands trespassed upon are in Alabama, whence the logs are rafted to the mills in Louisiana and there manufactured into lumber.

The agents report the boxing of trees for turpentine under contract with certain turpentine distillers. The amount of public land trespassed upon is estimated to be 13,160 acres, and the damage to timber to amount to \$13,160. Suits have been instituted and are still pending against parties so trespassing.

In Idaho the registers and receivers report a number of arrests for cutting railroad ties, and in two instances judgment has been rendered for the government to the amount of more than \$13,000.

In Louisiana the past efforts of the special agents in suppressing timber depredations have had the effect of greatly diminishing the number of cutting of public timber in those districts under their charge. A number of the prominent citizens and mill men in Calcasieu Parish have expressed a strong desire for the suppression of such depredations, and for the preservation of the lumber interests and the credit and good name of the inhabitants, they have openly pledged themselves to discourage and discourage by every means in their power the unlawful cutting of timber on government lands.

The last suit pending in the United States court was settled August 1879, and \$20,000 was covered into the United States Treasury as a fine for count of timber depredations. Considerable timber taken from public lands entered under the homestead law in the vicinity of the Sabine River has been sold to the Louisiana Western Railroad Company has been reported. The efforts of the agent are inducing entries of lands. A number of small lots of logs cut from lands fraudulently entered under the homestead law have been found here and there in the vicinity of the Sabine River.

In Michigan several cases of timber trespass have been reported, amounting to 19,111,946 feet. One person pleaded guilty to unlawfully taking 50,000 feet of timber from government land, and was fined the sum of \$300 by the United States district court.

Information has been received stating that Canadians are cutting the national boundary, and lumbering extensively on the government lands in the Marquette district and on the shores along Lake Superior. Several cases of heavy depredations on the public timber are now being investigated by our agent.

In Minnesota the efforts of the government have been directed toward the investigation of timber trespasses committed several years ago, some of which have been settled without litigation by the payment of



stumpage to the amount of \$2,634.87, which amount has been covered into the Treasury. Many cases of old trespass, involving a large amount of timber, are still pending in the United States court. Seven cases of recent trespass reported by the agents, to the amount of 336,792 feet of timber, are being adjusted.

It has been reported that trespass to the extent of 15,000,000 feet of timber has been committed upon the unsurveyed public lands located with half breed scrip, the trespassers not having first complied with the conditions of the law in regard to locating such scrip.

Extensive trespassing has been reported along our northern national boundary line, where large quantities of lumber and a great number of railroad ties for the use of the Canadian Pacific Railroad Company have been taken and shipped across the line into Manitoba. How to arrest it is a grave question, in view of the great distance of the localities from the United States courts.

In Mississippi it has been found, from observations made by United States deputy surveyors in their connection with efforts made to suppress timber depredations, that in the southern part of the State, wherever it was found profitable to cut and remove government timber, it has been universally done. For more than twenty years the work of spoliation has been carried on, until now there is not a stream in the State emptying into the Gulf of Mexico and large enough for floating logs the banks of which have not been denuded of all their valuable pine timber.

The operations of the agent have been seriously interrupted by the prevalence of yellow fever and the establishing of quarantine. The State laws are such that it is extremely difficult to secure evidence necessary to the successful prosecution of trespass cases.

Ninety-seven thousand one hundred and sixteen logs are reported as unlawfully cut from public lands on the banks of the Hobolochitto, Red, and Black Creeks, and suits have been instituted for the recovery of the value of the timber and the punishment of the trespassers.

Report is made of trespass covering a large acreage of public timber lands by boxing the trees thereon for turpentine purposes.

In Missouri extensive timber trespassing in Camden County and along the whole region of the Osage River has been reported, and will be investigated at an early day. It is estimated that last year 500,000 railroad ties were cut and rafted through the Osage River, a large proportion of which were cut from government lands pre-empted for the sole purpose of obtaining the timber thereon.

In Oregon civil actions for timber trespass are pending in the courts, and one to the amount of \$10,500.

In Washington Territory extensive depredations upon the public timber are reported, and the agent is actively engaged in a thorough investigation preparatory to instituting suits. In cases where suits have been instituted judgment has been rendered in favor of the government to the amount of \$2,951.50. Stumpage to the amount of \$543.48 has been paid to the government.

In Wyoming and Utah, as well as Colorado, the manufacture of ties obtained from government lands and the sale of them to the Union Pacific and other railroad companies has become a great monopoly, one contracting party alone having cut and delivered thousands of railroad ties so obtained, from which they have realized vast sums of money. Numerous parties have had recourse to the unsurveyed public lands bordering on the tributaries of the North Platte River, and from the public lands in the one region bordering on the French and Brush Creeks no less than

1,000,000 railroad cross-ties have been taken. The sum of \$20,261 has been paid into the United States Treasury in settlement for 810,600 round ties unlawfully taken from the public lands. Mill owners and coal companies in Wyoming have been reported as trespassing on the public timber, and one very extensive lumber and charcoal company is reported as having cut during the last season more than 1,000 feet of timber and consumed nearly 80,000 cords of wood in the manufacture of charcoal, much of which timber was obtained from the public lands. In one small section of this Territory the United States deputy surveyor reports 200,000 cords of wood, 1,000,000 feet of logs, 40,000 fence poles, and 80,000 cross-ties as having been taken in a few years.

One suit pending at the last term of the United States court in Wyoming has been settled by the department, and none have since been instituted.

Parties seem disposed to cease trespassing where there is a probability of detection; otherwise it would be carried on as extensively as ever.

In Utah the cutting of public timber is carried on to a large extent but mostly for domestic and mining purposes.\*

From Wisconsin letters were received early in the past fiscal year stating that public timber trespassers were becoming so numerous that honest lumbermen could not compete with them, and that the operation of the homestead law for the purpose of securing a color of title to public timber was the worst feature they had to contend with, as nine-tenths of the homestead entries were made for the purpose of stripping the land of its timber.

In view of these facts, special attention has been paid to timber trespass in this State. Many new cases of trespass have been reported, involving 13,257,624 feet of logs, 767 cords of wood, 1,100 railroad ties, and 50 cords of tan bark; 2,156,319 feet of logs and 262 cords of wood have been delivered to the special agents on demand.

A large number of persons have been indicted, and many suits are now pending in the courts. The sum of \$3,363.08 has been covered by the United States Treasury on account of timber depredations.

In all cases where the agents could trace the logs out by a trespasser upon the public lands into the possession of any mill company or lumber speculator, they have notified said company or speculator that the government would hold them responsible for the logs, and the value thereof, until the cases against the trespassers should be disposed of.

Reports from the agents and others show that while trespassing upon public timber lands in this State has been extensively carried on for a number of years past, the material has changed hands so frequently and the trespasses committed so long ago, it would be very difficult to prove any cases now. Even in trespass cases of later years it is difficult to collect sufficient evidence, as many of the saw-mill owners are, or have been, connected with the trespassers upon public lands, and have agreed among themselves not to disclose any

\*Much complaint is made, however, of the cutting of small timber less than 4 inches in diameter, contrary to the departmental regulations made for the purpose of preserving the enactments of the law for the protection of the undergrowth of timber set forth in act of June 3, 1878. Such timber is found very convenient for use in working the mines, and is used apparently by general consent; but if the practice of cutting the small timber continues, it is feared that a great portion of the timber will be denuded of its undergrowth within two years. The mine owner who cuts the timber for the timber should be prosecuted rather than the man who cuts the timber.

and information has been received that the woods have in several places been set on fire in order to destroy evidence.

Four special agents are endeavoring to obtain testimony sufficient to sustain the suits now pending, and are collecting evidence of new trespass cases for the purpose of instituting suits. There is no difficulty in ascertaining the fact that large quantities of timber have been unlawfully cut from public lands, as the agents report that at least 105,000,000 feet of logs are now collected in booms in the Wisconsin River; but it is difficult to ascertain when and by whom they were cut, and just what portion of them were unlawfully taken from public lands.

In the turpentine orchards of Florida, Alabama, and Mississippi much injury results to the public timber by reason of frequent fires, which either kill the trees or burn them so badly around the boxes that in a high wind they readily break and fall. After the yield of turpentine has become exhausted cattle owners sometimes spread fire *ad libitum* over the forests, and in one such instance by the raging of the fire for a single night more than a million pine stumps remained from what had been so many valuable pine trees before being boxed for turpentine purposes, no less than half of which were on government lands.

Reports have been received of wanton destruction by fire in the public timber forests on the mountain slopes of Utah. In one case 10,000 acres on unsurveyed land were thus destroyed. In the broken sections of country where there is much fallen timber and no water, it is difficult to stay the progress of these fires. There are many theories as to their origin, some stating that they spread from campers' fires, and others asserting that proof can be adduced that they are the work of men using large quantities of fence poles, who deliberately set fires in the best groves in order to deaden the timber and make it light and easy to haul away. If the fires are often repeated the result will be serious in its climatic influences, and especially will the snows, which now often lie till August, become melted in June, and so destroy the value of the mountain streams, thus swollen, for irrigating purposes.

The powers of the department are so enfeebled by the limited appropriations for detecting and punishing timber trespassers that but a tithe of the plunder and destruction of the timber on the public domain can be arrested. There is great necessity for more prompt and vigorous action than the government has heretofore taken for the protection of its interests.

The work during the past fiscal year of the special division of this office having charge of the business arising under the efforts of the department to investigate and suppress timber depredations is thus stated:

Letters received.....	1, 229
Letters written.....	735
Covering pages in letter record....	553

#### PRIVATE LAND CLAIMS.

In addition to the survey, sale, or other disposal of the public lands, the business of this office includes the work of segregating therefrom by the proper surveys numerous private claims arising under grants of various kinds from foreign powers which exercised sovereignty over portions of the country before they came under the jurisdiction of the United States, and of transferring the title to the claimants, pursuant to laws providing therefor. All matters of this kind, with others partaking in some measure of the same character, are placed under the supervision of a distinct division of this office.

\* \* \* \* \*



## SOUTHERN PUBLIC LANDS.

Congress, on the 22d of June, 1876, passed an act repealing § 2303 of the Revised Statutes of the United States, which inhibited disposal of the public lands in the States of *Florida, Alabama, Mississippi, Louisiana, and Arkansas*, otherwise than to actual settlers, the provisions of the homestead laws. The repealing act provided that the public lands affected thereby should be offered at public sale as practicable, according to the provisions of existing law, and that they should not be subject to ordinary private entry until after they were offered.

The carrying of this law into effect made necessary a vast amount of work, in addition to the current official business of the office.

In order to ascertain and select the vacant tracts for restoration to the market, it was deemed proper to make up descriptive lists thereof from the records of this office, and after comparing them with similar lists made up from the records of the several district land offices, and correcting all errors found to exist therein, to have executive proclamations prepared and issued, and the land offered for sale in the manner prescribed in chapter 7, title 32, Revised Statutes of the United States.

The public lands in the State of *Florida* have now all been proclaimed and offered at public sale. The lands embraced in the former Newnansville land district, which lie south of the base line, were offered at the district land office at Gainesville on the 29th October, 1878. The lands embraced within the former Tampa district, which comprise the peninsula of Florida lying south of the line between townships 19 and 20 south, were offered on the 15th April, 1879. The lands embraced within the former Tallahassee and Saint Augustine districts, with a small portion of the former Newnansville district lying north of the base line, were offered on the 6th May, 1879.

The vacant public lands in the State of *Alabama*, included the former Saint Stephen's, Demopolis, Elba, Greenville, Montgomery, and a part of the former Lebanon districts, comprising considerably more than one-half of the State, were proclaimed and offered, the portion at the Montgomery land office November 19, 1878, and the remainder at the Mobile office on the 26th of the same month. The delay in perfecting the lists of public lands in the northern part of the State, comprising the former Tuscaloosa and Huntsville land districts and the northern portion of the former Lebanon district, was suspended until an investigation could be had in view of allegations having been made that the lands were in a great part *mineral*, and not legally subject to sale as agricultural lands. An examination of the alleged mineral lands was made by a special agent dispatched to Alabama for the purpose, and the lands shown by his report to be mineral, covering one-half of the Huntsville district and probably one-third of the Tuscaloosa district, have been withheld from offering. The public lands in the Huntsville district not withheld as containing mineral, and the northern part of the former Lebanon district, have just been proclaimed and will be offered at the district land office at Huntsville, January 1880, while that portion of the public lands in the former Tuscaloosa district not reported as mineral is now ready and will be proclaimed and offered at an early day.

The vacant lands in the State of *Mississippi* were all offered at the district land office at Jackson, December 3, 1878.

In the State of *Louisiana*, lists have been made up embracing the vacant public lands found to be vacant on examination of the records



office and of the district offices. The lands found to be vacant in the former Opelousas district were proclaimed and offered at the district land office at New Orleans, May 26, 1879. The lands in the Southeastern, Greensburg, and Monroe districts were offered at the same place, August 26, 1879. The residue of the lands in the State, comprising the North-western or Natchitoches district, will be proclaimed as soon as discrepancies between the records of this office and the records of the district office at Natchitoches can be inquired into and the errors corrected.

The vacant public lands in *Arkansas* have all been offered at public sale, the offerings having taken place as follows: One at Harrison, beginning October 1, 1877; one at Little Rock, beginning on the 22d of the same month; and one at each of the district offices at Little Rock, Camden, and Dardanelle, beginning February 4, 1878.

#### ABANDONED MILITARY RESERVATIONS.

The sixth section of the act of Congress, approved June 12, 1858 (11 Stat., p. 336), provides that lands embraced in abandoned military reservations, except in Florida, shall not be subject to the operation of the general laws for the disposal of the public lands of the United States, and they can only be disposed of in such manner as may from time to time be provided for by special enactment.

The act of Congress of February 24, 1871 (16 Stat., p. 430), provided for the disposal of the following useless and abandoned military reservations: Forts Lane, in Oregon; Walla Walla, in Washington Territory; Camp McGarry, in Nevada; Zarah, in Kansas; Sumner, in the Territory of New Mexico; Jesup and Sabine, in Louisiana; Wayne and Smith, in Arkansas; a part of Abercrombie, in Minnesota, and a portion of Bridger, in the Territory of Wyoming.

The reservation of Fort Walla Walla, in Washington Territory, was returned to the custody of the War Department, as again required for military purposes.

The lands embraced in the reservations at Fort Lane, Fort Zarah, and Fort Jesup were offered at public sale. In the case of Fort Lane there were no bidders. In the case of Fort Zarah and of Fort Jesup there were only a few tracts bid for and sold. Since the offering, the lands covered by these reservations have been subject to private entry at the appraised value, as provided for in said act of 1871.

Congress, by act approved January 30, 1879, provided for laying open the lands formerly embraced in the Fort Wayne, Arkansas, military reservation to entry in the same manner as other public lands in said State. Instructions were accordingly issued by this office to the local land officers at Harrison, Ark.—the district in which said reservation is embraced—March 24, 1879, in pursuance of which forty-five homestead entries have been made, covering 5,198.45 acres, leaving 6,870.68 acres of the reservation remaining unentered.

In the case of the other reservations mentioned in said act of 1871, further action of Congress is deemed necessary for the proper disposal of them, as stated in former reports of this office. In regard to Fort Sabine, Louisiana, Camp McGarry, Nevada, and part of the Fort Bridger reservation in Wyoming Territory, I renew the recommendation made in former reports that Congress legislate for opening the lands to disposal as other public lands, as was done in the case of Fort Wayne, in Arkansas, under the act of January 30, 1879, above alluded to. The same action is recommended in reference to Fort Thorn, New Mexico, and Camp Floyd, Utah, renewing the recommendation in regard thereto found on page 141 of the last annual report of this office.

## RESERVATIONS OF PUBLIC LANDS FOR MILITARY PURPOSES

I have to report that during the fiscal year ending June 30, 1879, reservations of public lands for military purposes were declared, enlarged, as follows, viz:

*In Colorado.*—By President's order of January 28, 1879, a reservation of six miles square at Pagosa Springs, excluding the one mile square reserved as a prospective town site, May 22, 1877, was declared for Lewis.

*In Dakota.*—By President's order dated December 18, 1878, under provisions of the act of Congress approved June 18, 1878, the reservation of Fort Meade was declared, it being 2 miles wide and about 6 miles long. The public surveys were extended over so much of the reservation as falls in township 5 north, range 5 east, Black Hills meridian prior to the date of the order reserving the lands. A small part of the reserve falls in township 6 north, range 5 east, which is unsurveyed.

*In Montana.*—By President's order dated August 5, 1878, Fort Missoula reservation was enlarged by adding to the post reservation the south half of northeast quarter and the southeast quarter of section 25, of township 13 north, range 20 west; the south half of northeast quarter, south half of northwest quarter, southeast quarter of southeast quarter, northeast quarter of southwest quarter and west half of southwest quarter of section 30, of township 13 north, range 19 west.

By President's order dated June 10, 1879, a reservation of timber for Fort Missoula, on unsurveyed land, was declared.

*In Nebraska.*—By President's order dated June 28, 1879, Fort Robinson was enlarged so that the eastern boundary should be  $2\frac{1}{2}$  miles from the flagstaff, and the southern, western, and northern boundaries 2 miles from the flagstaff, making a reserve of 18 square miles, besides an additional tract reserved by the order of November 14, 1876, but not included in the order of June 28, 1879.

By Executive order dated April 23, 1879, Camp Sheridan reservation was enlarged on the south by extending the southern limit 8,300 feet.

Respectfully submitted.

J. M. ARMSTRONG,  
Acting Commissioner.

Hon. C. SCHURZ,  
Secretary of the Interior.

No. 1.—Tabular statement showing the number of acres of public lands surveyed in the following land States and Territories up to June 30, 1878, during the present fiscal year, and the total of the public lands surveyed up to June 30, 1879; also, the total area of the public domain remaining unsurveyed within the same.

Land States and Territories.	Areas of public lands in States and Territories.			Number of acres of public lands surveyed.				Total area of public lands surveyed up to June 30, 1879.
	In acres.	In square miles.	Up to June 30, 1878.	Prior to June 30, 1878, not heretofore reported.	Within the fiscal year ending June 30, 1878.	Total up to June 30, 1878.		
Wisconsin.....	84,511,300	53,924	34,511,300			34,511,300		
Iowa.....	35,228,800	55,045	35,228,800			35,228,800		
Minnesota.....	53,456,840	83,531	30,172,415			30,172,415		
Kansas.....	51,770,240	80,801	51,770,240			51,770,240		
Nebraska.....	48,630,800	75,965	39,930,807			39,930,807		
California.....	160,952,640	157,801	40,347,402	340,094.70		40,687,496.70		
Nevada.....	71,737,600	112,080	11,538,800	290,538.74		11,829,338.74		
Oregon.....	60,976,800	95,374	21,127,892	103,496.42		21,231,388.42		
Washington.....	44,798,160	69,984	13,821,545	229,182.17		14,050,727.17		
Colorado.....	60,880,000	104,500	22,182,800	101,894.99		22,284,694.99		
Utah.....	54,664,640	84,476	8,899,895	192,713.18		9,092,608.18		
Arizona.....	72,908,240	113,916	5,281,737			5,281,737		
New Mexico.....	77,568,640	121,201	8,471,890	38,188.65		8,510,078.65		
Dakota.....	96,596,480	150,983	21,459,412	205.66		21,664,827.66		
Idaho.....	55,228,160	86,294	6,834,009	99,418.92		6,933,427.92		
Montana.....	92,016,640	143,770	10,543,827			10,543,827		
Wyoming.....	62,645,120	97,883	8,101,049	298,190.14		8,399,239.14		
Missouri.....	41,830,831	65,370	41,824,000	12,930.61		41,836,930.61		
Illinois.....	32,462,115	50,722	32,462,115			32,462,115		
Alabama.....	30,179,840	47,156	30,179,840			30,179,840		
Louisiana.....	26,467,440	41,346	25,232,044			25,232,044		
Mississippi.....	33,410,063	52,292	33,406,720			33,406,720		
Arkansas.....	37,931,520	59,288	30,103,706			30,103,706		
Florida.....	25,570,960	39,064	25,576,900			25,576,900		
Ohio.....	21,637,760	33,800	21,637,760			21,637,760		
Indiana.....	84,128,640	34,451	36,128,640			36,128,640		
Michigan.....	35,465,083	55,414	35,465,083			35,465,083		
Illinois.....	44,154,240	68,901	27,003,800			27,003,800		
Indian Territory.....	369,539,600	577,390						
Alaska.....								
Total.....	1,814,768,922	2,835,606	724,311,477	1,823,977.97	8,453,781.63	734,501,236	1,050,197,689	

\* 624,948 acres reserved in the southwestern district, Louisiana, the original surveys made in 1907 having been totally obliterated in the field by the lapse of time, and the disposition of lands prevented by the inability of settlers and others to describe the lands desired by them to be entered.

DEPARTMENT OF THE INTERIOR, GENERAL LAND OFFICE, October 30, 1878.



No. 2.—Statement of public lands sold for cash and entered under the homestead and timber-culture acts, with the amounts received therefor, including fees and commissions from all sources, during the fiscal year commencing July 1, 1878, and ending June 30, 1879.

States, Territories, and land offices.	Fiscal year 1879.	Sales of land for cash, and amount re- ceived therefor, including cash re- ceived on commut- ed homesteads.				Lands entered under the homestead acts, with amount of government fees, and registers' and receivers' commissions received thereon.				Lands entered under the timber-culture acts, with amount of government fees, and registers' and receivers' commis- sions received thereon.				Aggregate of acres disposed of.	Aggregate amount received from all sources.	Amount.	Incidental ex- penses.
		Amount.		Commis- sions.		Commis- sions.		Commis- sions.									
		Acres.	Amount.	Acres.	Fees.	Acres.	Fees.	Acres.	Fees.								
ALABAMA.																	
	Huntsville.....	112 39	\$313 02	50,890 60	\$3,435	\$1,856 00	\$5,291 00							51,002 99	\$5,799 02	\$2,616 09	
	Huntsville.....	78 66	136 70	45,214 11	8,030	1,737 00	4,767 00							45,292 77	5,014 20	2,571 19	
	Total .....	191 05	449 72	96,104 71	6,465	3,593 00	10,058 00							96,295 76	10,813 22	5,187 19	
	Mobile.....	109 09	137 45	2,492 44	185	315 60	500 60							2,022 43	638 05	819 35	
	Mobile.....	68 94	98 46	7,416 06	560	530 85	1,090 85							7,483 00	1,189 81	1,249 95	
	Total .....	178 93	235 91	9,908 50	745	846 45	1,591 45							10,085 43	1,827 86	2,069 30	
	Montgomery.....	647 21	920 64	14,245 59	985	950 20	1,935 20							14,892 80	3,576 54	3,125 25	
	Montgomery.....	3,694 91	5,364 40	37,963 79	2,655	1,486 10	4,141 10							41,498 70	10,067 75	3,683 98	
	Total .....	4,242 12	6,315 04	52,149 38	3,640	2,436 30	6,076 30							56,391 50	13,644 29	6,819 23	
Grand total .....	4,610 10	7,000 07	153,162 59	10,850	6,875 75	17,725 75							162,772 09	26,294 87	14,675 72		
ARIZONA.																	
	Florence.....	7,378 20	4,924 50	1,440 00	115	93 00	208 00							11,298 20	5,443 00	1,057 93	
	Florence.....	10,615 09	4,249 00	1,060 68	105	85 50	190 50	2,480 00	\$155	20 00	\$219 00	13,016 87	4,855 50	785 63			
	Total .....	17,993 89	9,173 50	3,040 68	220	178 50	398 50	3,260 00	205	84 00	289 00	24,314 07	10,498 50	1,843 61			
	Prescott.....	1,438 07	1,981 61	1,656 29	110	80 50	190 50							8,117 86	2,405 11	853 10	
Prescott.....	409 57	705 00	360 00	25	13 50	38 50							760 57	530 50	71 00		





No. 2.—Statement of public lands sold for cash and entered under the homestead and timber-culture acts, &amp;c.—Continued.

States, Territories, and land offices.	Fiscal year 1870.	Sales of land for cash, and amount re- ceived therefor, including cash re- ceived on commit- ted homesteads.				Lands entered under the homestead acts, with amount of government fees, and registers' and receivers' commissions received thereon.				Lands entered under the timber-culture acts, with amount of government fees, and registers' and receivers' commis- sions received thereon.				Aggregate amount received from all sources.		Incidental ex- penses.	
		Acres.	Amount.	Fees.	Commis- sions.	Acres.	Fees.	Commis- sions.	Amount.	Acres.	Amount.	Commis- sions.	Fees.	Amount.	Amount.	Amount.	
CALIFORNIA—Cont'd	1st half	22,313.10	\$32,994.53	29,447.36	\$1,985	29,447.36	\$1,985	\$2,106.00	\$4,091.90	51,700.46	\$40,965.03			\$40,965.03	\$3,023.85		
	2d half	3,140.28	5,827.98	18,731.89	1,175	18,731.89	1,175	1,107.50	2,282.56	21,900.98	9,991.58			9,991.58	4,040.50		
	Total	25,453.38	38,822.51	48,179.24	3,160	48,179.24	3,160	3,213.50	6,373.50	73,601.44	50,956.61			50,956.61	7,063.85		
	Shasta	3,961.04	9,175.85	7,091.74	515	7,091.74	515	723.00	1,238.00	11,652.82	16,354.10			16,354.10	2,715.49		
Shasta	2d half	2,787.47	5,585.07	8,298.93	445	8,298.93	445	518.47	963.47	11,240.40	7,332.54			7,332.54	2,679.61		
Total		6,748.51	14,760.92	15,990.71	960	15,990.71	960	1,241.47	2,201.47	22,893.22	23,706.64			23,706.64	5,395.10		
Stockton	1st half	5,251.96	9,687.95	6,309.91	395	6,309.91	395	637.01	1,032.01	11,721.87	11,686.96			11,686.96	2,149.81		
	2d half	5,226.04	9,163.97	9,038.27	550	9,038.27	550	728.36	1,278.36	14,744.31	11,109.33			11,109.33	2,354.56		
	Total	10,478.00	18,851.92	15,348.19	945	15,348.19	945	1,365.37	2,310.37	26,468.18	22,796.29			22,796.29	4,504.40		
	Shasta	11,313.77	14,737.69	9,482.42	615	9,482.42	615	610.13	1,225.13	21,516.19	16,022.73			16,022.73	2,282.08		
Shasta	2d half	8,282.73	8,951.73	11,670.67	745	11,670.67	745	549.02	1,414.52	23,544.19	17,186.25			17,186.25	1,850.53		
Total		19,596.50	23,689.39	21,153.09	1,360	21,153.09	1,360	1,279.05	2,639.05	45,060.38	37,862.98			37,862.98	4,212.61		
Visalia	1st half	11,550.50	9,589.42	5,713.61	365	5,713.61	365	629.50	1,004.50	24,219.25	18,861.92			18,861.92	2,218.83		
	2d half	3,814.75	4,836.72	4,961.90	260	4,961.90	260	441.74	701.74	186.00	186.00			186.00	1,731.15		
	Total	15,365.25	14,426.14	10,675.51	625	10,675.51	625	1,071.24	1,706.24	25,035.04	18,175.13			18,175.13	3,949.98		
	Grand total.	31,287.91	219,436.22	223,014.29	14,293	223,014.29	14,293	16,080.03	30,283.03	15,418.81	1,476.00	276,505.42			276,505.42	48,342.14	
COLORADO.																	
Central City	1st half	1,943.45	9,659.89	1,810.00	25	1,810.00	25	79.80	142.00						2,283.48	1,563.18	

1st half.....	2,710.58	3,049.48	4,040.80	250	205.50	485.50	1,321.00	95	40.00	135.09	7,774.13	4,430.96	1,032.49	1,351.89
2d half.....	2,276.13	3,082.70	4,177.00	245	243.00	508.00	1,321.00	95	40.00	135.09	7,774.13	4,430.96	1,032.49	1,351.89
Total.....	4,986.71	6,132.18	8,217.80	495	448.50	993.50	2,642.00	190	80.00	270.18	15,548.26	8,861.92	2,064.98	2,703.78
1st half.....	3,060.10	5,323.24	9,677.39	620	1,089.50	1,039.50	0,406.99	415	184.00	569.00	10,173.40	8,273.71	2,532.41	2,532.41
2d half.....	1,680.30	3,072.59	8,416.51	600	972.50	1,522.50	6,852.51	420	192.00	612.00	18,669.32	6,681.69	2,715.42	2,715.42
Total.....	5,078.40	8,005.83	10,093.90	1,220	2,062.00	2,562.00	13,259.50	835	376.00	1,181.00	28,842.72	14,955.40	5,247.83	5,247.83
1st half.....	8,904.76	5,689.96	3,420.90	120	90.00	210.00	.....	.....	.....	.....	5,734.76	12,806.96	1,869.86	1,869.86
2d half.....	6,792.75	11,300.38	3,490.75	220	204.00	424.00	.....	.....	.....	.....	16,202.56	12,806.96	2,047.20	2,047.20
Total.....	10,527.51	16,990.34	5,400.75	340	300.00	634.00	.....	.....	.....	.....	15,937.36	19,437.36	3,917.06	3,917.06
1st half.....	1,479.26	2,978.40	.....	.....	.....	.....	.....	.....	.....	.....	1,479.26	3,207.40	970.50	970.50
2d half.....	635.61	1,488.65	80.00	5	6.00	11.00	480.00	20	12.00	42.00	1,105.61	1,801.65	787.08	787.08
Total.....	2,114.86	4,467.05	80.00	5	6.00	11.00	480.00	20	12.00	42.00	2,584.86	5,009.05	1,757.58	1,757.58
1st half.....	3,575.70	5,984.60	14,194.00	915	913.50	1,828.50	370.00	30	12.00	42.00	18,080.70	8,532.10	2,231.42	2,231.42
2d half.....	1,621.11	2,056.38	14,708.98	950	801.00	1,841.00	258.60	20	12.00	32.00	16,589.09	4,814.88	2,383.02	2,383.02
Total.....	5,196.81	8,040.98	28,902.98	1,865	1,804.50	3,669.50	628.60	50	24.00	74.00	34,679.79	13,346.98	4,614.44	4,614.44
Grand total.....	20,658.16	49,707.52	65,362.42	4,185	4,765.50	8,930.50	15,962.07	1,045	472.00	1,517.00	110,980.61	63,472.02	21,413.25	21,413.25
DAKOTA.														
1st half.....	578.31	2,180.27	1,022.37	65	52.00	117.00	1,505.23	100	40.00	140.00	3,408.91	2,536.27	742.00	742.00
2d half.....	212.34	530.85	3,205.51	200	216.00	419.00	5,071.49	339	152.00	532.00	8,480.34	1,368.53	935.08	935.08
Total.....	1,091.65	2,710.12	4,227.88	265	268.00	536.00	6,576.72	439	192.00	672.00	11,889.25	3,904.80	1,677.08	1,677.08
1st half.....	1,527.69	1,278.40	.....	.....	.....	.....	.....	.....	.....	.....	1,527.69	1,870.40	1,172.07	1,172.07
2d half.....	122.08	531.35	5,153.69	325	130.00	455.00	440.00	30	16.00	46.00	5,715.77	2,100.33	1,360.70	1,360.70
Total.....	1,649.77	1,809.75	5,153.69	325	130.00	455.00	440.00	30	16.00	46.00	7,243.46	3,970.73	2,532.77	2,532.77
1st half.....	12,119.85	25,465.87	73,468.53	4,710	2,779.22	7,489.22	87,335.95	5,835	2,248.00	7,833.00	172,974.34	42,106.34	3,235.90	3,235.90
2d half.....	7,945.14	10,369.47	221,764.95	13,850	7,700.10	21,520.10	196,336.71	10,010	4,028.00	14,038.00	388,048.80	64,962.12	3,578.73	3,578.73
Total.....	20,064.99	41,835.34	205,233.48	18,560	10,479.32	29,009.32	246,722.67	15,845	6,276.00	21,871.00	661,023.14	107,148.46	6,814.63	6,814.63
1st half.....	13,885.45	26,430.86	97,021.46	5,699	3,674.11	9,504.11	46,146.28	2,909	1,212.00	4,172.00	137,063.13	41,315.97	3,000.00	3,000.00
2d half.....	6,801.76	15,440.17	164,041.72	16,810	5,853.18	16,108.18	58,626.76	8,785	1,568.00	5,373.00	223,183.24	65,832.49	3,331.00	3,331.00
Total.....	20,187.21	41,868.83	261,063.18	16,240	9,457.29	25,612.29	104,773.04	14,634	2,780.00	9,545.00	360,186.37	107,148.46	6,331.00	6,331.00



No. 2.—Statement of public lands sold for cash and entered under the homestead and timber-culture acts, &amp;c.—Continued.

States, Territories, and land offices.	Fiscal year 1879.	Sales of land for cash, and amount re- ceived therefor, including cash re- ceived on commut- ed homesteads.		Lands entered under the homestead acts, with amount of government fees, and registrars' commissions received thereon.			Lands entered under the timber-culture acts, with amount of government fees, and registrars' and receivers' commis- sions received thereon.			Aggregate amount disposed of.		Aggregate amount received from all sources.		Incidental ex- penses.
		Acres.	Amount.	Acres.	Fees.	Commis- sions.	Amount.	Acres.	Commis- sions.	Amount.	Acres.	Amount.	Amount.	
Dakota—Cont'd.	1st half.	4,477.91	\$5,997.46	36,847.88	\$2,320.	\$1,075.00	\$3,395.00	44,352.78	\$2,790.	\$1,132.00	85,678.57	\$13,959.46	\$2,247.66	
	2d half.	3,013.09	5,809.78	87,117.95	5,460.	2,340.00	7,800.00	121,373.51	7,590.	3,056.00	212,104.55	25,933.03	4,189.84	
	Total	8,091.00	11,807.24	123,965.83	7,780.	3,415.00	11,195.00	165,726.29	10,380.	4,188.00	297,783.12	39,892.49	6,437.50	
	Yankton.	4,054.06	6,864.44	64,281.94	4,050.	1,887.51	5,937.51	87,185.00	5,505.	2,228.00	155,523.00	20,970.95	3,000.00	
	Yankton.	2,887.00	4,758.77	113,849.71	7,160.	3,420.41	10,580.41	119,168.01	7,470.	3,032.00	238,064.72	26,879.18	3,228.05	
FLORIDA.	1st half.	6,943.06	11,623.21	178,131.65	11,210.	5,307.92	16,517.92	206,353.01	12,975.	5,200.00	391,587.72	47,950.13	6,228.05	
	2d half.	58,027.68	111,686.07	867,775.05	54,350.	29,051.53	83,401.53	731,867.73	46,203.	18,732.00	1,057,811.06	273,714.25	30,020.53	
	Grand total	64,970.74	123,309.28	1,045,906.70	65,560.	34,359.45	99,919.45	1,378,220.74	59,178.	23,932.00	1,429,398.78	321,664.38	36,248.58	
IDAHO.	1st half.	613.50	2,480.23	20,538.08	2,135.	1,177.30	3,312.30	2,660.34	185.	82.00	277.00	5,807.56	1,493.53	
	2d half.	2,571.00	5,620.32	26,864.30	1,835.	1,075.90	2,910.90	2,115.34	150.	68.00	218.00	3,201.34	1,628.13	
	Grand total	3,184.50	8,100.55	47,402.38	3,970.	2,253.20	6,223.20	4,775.68	335.	150.00	495.00	9,008.90	3,121.66	
IDAHO.	1st half.	5,105.69	3,141.50	18,212.80	1,045.	715.50	1,760.50	2,660.34	185.	82.00	277.00	5,807.56	1,493.53	
	2d half.	1,962.73	1,551.25	8,213.97	550.	419.50	940.50	2,115.34	150.	68.00	218.00	3,201.34	1,628.13	
	Total	7,068.42	4,692.75	26,426.77	1,595.	1,135.00	2,701.00	4,775.68	335.	150.00	495.00	9,008.90	3,121.66	
LEWISTON.	1st half.	5,167.29	7,835.53	14,479.77	965.	623.80	1,588.80	8,717.78	560.	232.00	792.00	11,632.07	2,772.28	
	2d half.	1,962.73	1,551.25	8,213.97	550.	419.50	940.50	2,115.34	150.	68.00	218.00	3,201.34	1,628.13	
	Grand total	7,130.02	9,386.78	22,693.74	1,515.	1,043.30	2,529.30	10,833.12	710.	294.00	1,010.00	14,833.41	4,400.41	



Oxford	1st half	569.03	350.00	3,040.00	100	114.00	304.00	584.22	40	16.00	56.00	4,223.25	856.00	1,977.88
Oxford	2d half	590.03	350.00	3,040.00	100	114.00	304.00	584.22	40	16.00	56.00	4,223.25	856.00	1,977.88
Total		15,902.51	17,378.88	52,772.47	3,435	2,379.80	5,814.80	22,634.68	1,435	614.00	2,139.00	91,399.66	23,078.62	9,970.25
IOWA.														
Des Moines	1st half	271.48	304.45	988.31	95	806.68	991.68	2,085.34	240	156.00	396.00	4,245.13	2,060.54	3,122.66
Des Moines	2d half	1,573.65	2,176.77	2,185.00	155	1,645.12	1,809.12	3,591.91	290	176.00	436.00	7,355.56	5,264.24	3,584.17
Grand total		1,850.13	2,571.22	3,173.31	250	2,541.80	2,791.80	6,577.25	500	332.00	832.00	11,600.69	8,224.78	6,706.82
INDIANA.														
Grand total													5.32	
ILLINOIS.														
Grand total			140.00										140.00	
KANSAS.														
Concordia	1st half	3,182.96	5,191.34	50,138.08	3,520	3,458.83	6,748.83	19,784.57	1,390	687.00	2,077.00	73,105.91	14,913.98	3,018.35
Concordia	2d half	1,874.86	3,068.09	51,822.50	3,360	3,943.11	7,303.11	20,983.76	1,425	756.00	2,161.00	74,681.92	13,737.98	2,134.65
Total		5,057.82	8,259.43	101,960.58	6,880	7,401.94	14,051.94	40,768.33	2,815	1,443.00	4,238.00	147,787.83	28,651.96	5,153.00
Hays City	1st half	2,410.70	4,561.88	148,686.06	9,340	5,046.28	14,386.28	155,751.75	9,815	3,864.00	13,779.00	306,848.51	35,701.16	2,070.50
Hays City	2d half	1,832.45	3,734.48	118,522.74	10,955	6,363.20	17,258.20	156,353.29	9,820	3,960.00	13,780.00	336,700.48	40,024.40	3,601.10
Total		4,243.15	8,296.36	327,008.80	20,295	11,349.48	31,644.48	312,137.04	19,635	7,824.00	27,559.00	643,548.99	75,725.56	5,671.60
Independence	1st half	197.27	296.59	1,870.10	130	146.94	276.94	81.76	10			2,007.37	1,080.78	2,771.82
Independence	2d half	34.59	197.27	9,803.85	685	360.21	1,045.21	81.76	10	4.00	14.00	10,080.29	2,028.98	3,033.46
Total		231.86	493.86	11,673.95	815	507.15	1,322.15	81.76	10	4.00	14.00	12,147.57	3,109.76	5,805.28
Kirwin	1st half	4,844.02	7,009.08	319,630.21	20,125	9,430.02	29,555.02	237,957.03	14,990	6,212.00	21,202.00	502,431.26	62,641.85	2,985.86
Kirwin	2d half	2,638.75	5,696.33	407,388.30	25,230	11,832.66	37,062.66	280,335.22	17,660	7,292.00	24,932.00	690,362.27	74,303.70	4,678.03
Total		7,482.77	10,705.41	727,008.51	45,355	21,262.68	66,617.68	518,292.25	32,650	13,504.00	46,134.00	1,192,793.53	136,945.55	7,663.89





Monroe	1st half	130.21	15	14.00	20.00	130.21	29.00	34.17
Monroe	2d half							
Total		130.21	15	14.00	20.00	130.21	29.00	34.17
Grand total		832.32	1,009.02	26,551.90	3,754.37	27,464.65	5,023.73	5,054.43
MICHIGAN.								
Detroit	1st half	53.16	466.48	377.13	1,027.13	0,421.28	1,566.74	1,270.11
Detroit	2d half	103.22	560.59	485.263.71	748.71	7,133.72	1,347.50	1,212.98
Total		156.38	1,027.07	862.39	1,775.84	16,554.99	2,914.24	2,483.09
East Saginaw	1st half	1,458.70	2,080.61	780.42	2,510.42	28,318.02	4,021.03	1,351.52
East Saginaw	2d half	1,243.50	1,654.45	778.16	2,438.16	27,552.09	4,384.61	1,953.45
Total		2,702.20	3,735.05	1,558.58	4,948.58	55,870.11	8,405.64	2,304.97
Marquette	1st half	1,480.89	2,429.59	1,280.654.76	1,824.76	20,245.66	5,133.20	1,256.40
Marquette	2d half	2,012.56	2,975.50	1,620.807.37	2,427.37	29,084.10	5,544.94	1,543.90
Total		3,493.45	5,405.09	2,901.465.13	4,252.13	49,329.76	10,678.14	2,800.30
Reed City	1st half	806.91	2,178.35	1,853.52	3,413.52	23,501.74	5,744.35	2,568.04
Reed City	2d half	501.14	1,712.30	1,410.1,522.77	3,002.77	21,318.05	4,871.17	2,280.12
Total		1,308.05	3,890.65	3,263.64	6,416.29	44,819.79	10,615.52	4,848.16
Traverse City	1st half	12	273.63	1,960.29	312.16	1,362.41	607.94	269.37
Traverse City	2d half							
Total		12	273.63	1,960.29	312.16	1,362.41	607.94	269.37
Grand total		7,680.30	14,371.50	17,815.00	17,815.00	165,453.13	33,671.27	12,732.89
MINNESOTA.								
Benson	1st half	1,688.09	5,548.33	38,594.13	17,211.26	57,454.08	12,629.51	3,631.00
Benson	2d half	1,076.18	4,250.73	65,601.49	13,741.39	80,569.06	17,467.46	2,249.54
Total		2,764.27	9,799.06	104,195.62	30,952.65	137,973.14	25,097.97	5,880.54
Detroit	1st half	7,983.09	17,890.03	38,077.34	45,429.47	91,480.90	27,612.45	3,029.34
Detroit	2d half	2,692.47	5,821.63	113,518.41	63,983.76	1,414.61	25,399.77	3,137.25
Total		10,675.56	23,711.66	151,595.75	109,413.23	271,684.51	52,912.20	6,166.59
Duluth	1st half	627.47	1,357.13	2,096.99	405.58	2,094.40	1,500.21	950.65
Duluth	2d half	476.30	910.58	360.311.00	671.00	6,974.89	1,663.33	914.34
Total		1,103.77	2,267.71	581.58	1,076.58	9,069.29	3,163.54	1,870.99

No. 2.—Statement of public lands sold for cash and entered under the homestead and timber-culture acts, &amp;c.—Continued.

States, Territories, and land offices.	Fiscal Year 1879.	Sales of land for cash, and amount re- ceived therefor, including cash re- ceived on commut- ed homesteads.				Lands entered under the homestead acts, with amount of government fees, and registers' and receivers' commissions received thereon.				Lands entered under the timber-culture acts, with amount of government fees, and registers' and receivers' commis- sions received thereon.				Aggregate amount received from all sources.	Incidental ex- penses.	
		Acres.	Amount.	Acres.	Fees.	Commis- sions.	Amount.	Acres.	Fees.	Commis- sions.	Amount.	Acres.	Amount.	Amount.	Amount.	
MINNESOTA—Con'd.																
Fergus Falls.....	1st half.	2,746.37	\$5,529.86	38,381.15	\$2,340	\$2,170.17	\$4,510.17	17,892.55	\$1,160	\$480.00	\$1,640.00	57,020.07	\$12,383.70	\$3,010.00		
Fergus Falls.....	2d half.	512.52	1,538.86	83,383.25	4,600	3,583.32	8,183.32	12,706.10	840	372.00	1,212.00	95,601.93	11,915.18	3,214.73		
Total.....		3,258.89	7,068.72	118,764.40	6,940	5,753.49	12,693.49	30,598.71	2,000	852.00	2,852.00	152,622.00	24,298.88	6,224.75		
New Ulm.....	1st half.	4,467.39	11,155.69	84,240.28	2,195	2,403.86	4,598.86	14,924.83	1,035	480.00	1,515.00	53,032.50	17,604.55	3,000.00		
New Ulm.....	2d half.	1,558.82	4,170.94	33,755.89	1,920	1,787.75	3,707.75	12,310.60	800	350.00	1,150.00	47,625.31	9,488.69	2,358.75		
Total.....		6,026.21	15,326.63	67,996.17	4,115	4,191.61	8,306.61	27,235.43	1,835	830.00	2,671.00	101,257.81	27,093.24	5,358.75		
Redwood Falls.....	1st half.	4,214.75	9,233.10	26,063.77	1,720	1,844.29	3,564.29	11,767.72	840	412.00	1,252.00	42,646.24	14,353.89	3,070.95		
Redwood Falls.....	2d half.	712.60	2,078.46	30,445.21	2,000	1,728.21	3,728.21	9,501.25	625	304.00	929.00	40,659.06	7,152.67	3,110.70		
Total.....		4,927.35	11,311.56	63,108.98	3,720	3,572.50	7,292.50	21,268.97	1,465	716.00	2,181.00	89,305.30	21,506.06	6,181.65		
Saint Cloud.....	1st half.	1,600.83	3,109.93	20,090.35	1,330	1,555.77	2,885.77	.....	.....	.....	.....	21,766.18	6,459.70	2,523.14		
Saint Cloud.....	2d half.	705.83	1,673.90	33,958.88	2,096	1,731.16	3,826.16	.....	.....	.....	.....	34,721.71	6,038.06	2,512.32		
Total.....		2,432.66	4,843.83	54,055.23	3,425	3,286.93	6,711.93	.....	.....	.....	.....	56,487.89	12,497.76	5,035.46		
Taylor's Falls.....	1st half.	2,832.72	5,406.70	2,478.10	165	298.29	463.29	.....	.....	.....	.....	5,310.82	5,963.49	1,069.90		
Taylor's Falls.....	2d half.	1,374.22	2,497.79	28,397.41	1,965	1,534.42	3,489.42	.....	.....	.....	.....	29,771.63	6,069.71	2,231.91		
Total.....		4,206.94	7,904.49	30,875.51	2,120	1,832.71	3,952.71	.....	.....	.....	.....	85,082.45	12,053.20	3,301.81		
Worthington.....	1st half.	3,608.68	9,918.77	21,638.71	1,305	2,067.41	3,432.41	21,634.31	1,600	668.00	2,268.00	47,011.70	15,838.98	3,000.25		
Worthington.....	2d half.	1,010.17	3,805.51	17,294.90	1,000	1,263.54	2,263.54	15,899.26	1,100	548.00	1,648.00	34,094.33	7,915.05	3,000.00		





No. 2.—Statement of public lands sold for cash and entered under the homestead and timber-culture acts, &amp;c.—Continued.

States, Territories, and land offices.	Fiscal year 1879.	Sales of land for cash, and amount re- ceived therefor, including cash re- ceived on commu- ted homesteads.			Lands entered under the homestead acts, with amount of government fees, and registrars' and receivers' commissions received thereon.			Lands entered under the timber-culture acts, with amount of government fees, and registrars' and receivers' commis- sions received thereon.			Aggregate of disposal of.		Aggregate amount received from all sources.		Incidental ex- penses.	
		Acres.	Amount.		Acres.	Fees.	Commis- sions.	Amount.	Acres.	Amount.	Acres.	Amount.	Amount.	Amount.	Amount.	Amount.
NEBRASKA—Cont'd.	1st half.	1,527.73	\$4,044.72		60,571.67	\$3,880.83	83,094.83	\$7,453.03	43,997.20	\$2,823.81	212.00	\$4,057.00	106,000.00	\$16,825.35	\$3,241.70	
	2d half.	285.14	1,227.19		88,429.19	5,395.4	4,404.45	0,799.45	54,292.46	3,305.1	460.00	4,855.00	112,076.70	17,301.64	3,022.86	
	Total	1,812.87	5,271.91		149,000.86	9,245.23	8,000.08	17,252.48	97,290.66	6,128.92	672.00	8,892.00	218,177.70	33,826.99	6,264.56	
Lincoln	1st half.	562.29	1,405.72		8,208.54	520.3	3,575.87	4,095.87	6,354.36	435.2	280.00	715.00	15,125.19	7,060.59	3,115.00	
	2d half.	27.81	69.53		6,107.71	335.2	2,421.22	2,770.22	7,000.35	455.2	288.00	743.00	13,135.87	4,205.25	2,005.92	
	Total	590.10	1,475.25		14,316.25	855.5	5,997.09	6,872.09	13,354.71	890.4	568.00	1,458.00	28,261.06	11,275.84	5,120.92	
Niobrara	1st half.	391.24	226.53		29,434.99	1,825.3	939.00	2,794.00	27,300.44	1,600.7	752.00	2,542.00	57,005.07	6,201.58	2,970.47	
	2d half.	880.16	1,199.20		63,821.68	4,030.4	1,968.00	5,268.00	64,400.49	4,354.1	1,800.00	6,150.00	129,192.33	11,469.59	3,301.39	
	Total	1,271.40	1,425.73		93,256.67	5,855.7	2,907.00	8,062.00	91,700.93	5,954.8	2,552.00	8,702.00	186,197.40	17,671.17	6,271.86	
Norfolk	1st half.	102.79	293.49		12,397.09	840.4	508.18	1,438.18	14,376.53	940.3	500.00	1,336.00	37,846.31	3,167.07	1,822.73	
	2d half.	13.31	17.18		26,585.89	1,675.1	1,128.70	2,803.70	18,504.06	1,170.5	516.00	1,696.00	45,103.80	4,759.86	2,425.58	
	Total	116.10	310.67		38,982.98	2,515.5	1,736.88	4,241.88	32,880.59	2,110.8	1,016.00	3,032.00	82,950.17	7,926.93	4,248.31	
North Platte	1st half.	1,691.64	2,798.13		26,473.08	1,675.3	908.00	2,583.00	18,745.12	1,190.4	488.00	1,678.00	46,992.14	7,639.13	2,947.45	
	2d half.	1,893.97	1,859.66		69,103.58	4,210.5	2,154.39	6,364.39	69,878.55	4,369.1	1,778.00	6,156.00	140,375.18	15,333.39	3,430.69	
	Total	3,585.61	4,657.79		95,576.66	5,885.8	3,062.39	8,947.39	88,623.67	5,559.5	2,266.00	7,834.00	187,377.32	22,972.52	6,378.14	
Grand total		11,861.42	22,476.70		703,851.35	43,830.4	34,002.39	77,832.25	465,963.91	23,949.1	12,724.00	42,064.00	1,181,681.63	154,729.61	41,317.27	



	1st half.	3,110.01	8,400.00	230	270	192.00	423.31	11,516.02	6,587.75	4,237.31	10,350.82	32,889.12	1st half.	1,310.01	463.00	920.00	65	45.00	110.00	41.60	9.00	2,271.70	641.00	692.93
	2d half.	8,110.01	3,273.75	800.00	50	143.00	3,497.31	1,274.11	979.44	2,560.00	105	168.50	2d half.	1,274.11	979.44	2,560.00	105	168.50	331.50	1,690.24	153.00	5,524.35	1,537.94	597.23
Total		11,516.02	6,587.75	4,237.31	270	192.00	423.31	11,516.02	6,587.75	4,237.31	10,350.82	32,889.12	Total		2,584.12	1,441.44	230	211.50	441.50	1,731.83	107.00	7,796.05	2,178.04	1,290.16
Grand total		32,889.12	17,244.92	10,350.82	605	703.50	1,308.50	160.00	10	4.00	43,403.94	29,703.43	Grand total		43,403.94	20,703.43	5,210.37							
NEW MEXICO.																								
La Mesilla	1st half.	1,310.01	463.00	920.00	65	45.00	110.00	41.60	9.00	2,271.70	641.00	La Mesilla	1st half.	1,310.01	463.00	920.00	65	4.00	5					692.93
La Mesilla	2d half.	1,274.11	979.44	2,560.00	105	168.50	331.50	1,690.24	110	43.00	5,524.35	La Mesilla	2d half.	1,274.11	979.44	2,560.00	105	48.00	110	153.00	5,524.35	1,537.94	597.23	
Total		2,584.12	1,441.44	3,480.00	230	211.50	441.50	1,731.83	115	52.00	7,796.05	2,178.04	Total		2,584.12	1,441.44	230	52.00	115	107.00				
Santa Fe	1st half.	8,903.19	7,492.50	3,914.95	245	158.00	403.00	160.00	10	4.00	14.00	Santa Fe	1st half.	8,903.19	7,492.50	3,914.95	245	4.00	10	14.00	14.00	12,818.14	8,162.50	1,361.27
Santa Fe	2d half.	11,140.25	12,970.25	5,263.87	335	210.00	534.00	160.00	10	4.00	14.00	Santa Fe	2d half.	11,140.25	12,970.25	5,263.87	335	4.00	10	14.00	14.00	10,724.12	14,278.25	1,729.10
Total		20,043.44	20,468.75	9,178.82	580	377.00	937.00	160.00	10	4.00	28,542.36	22,440.75	Total		20,043.44	20,468.75	580	10	10	14.00	28,542.36	22,440.75	3,090.37	
Grand total		22,627.56	21,910.10	12,638.82	810	588.50	1,308.50	1,891.03	125	56.00	181.00	37,338.21	Grand total		22,627.56	21,910.10	810	125	125	181.00	37,338.21	24,019.09	4,360.53	
OHIO.																								
Ohio	1st half.	123.15										Ohio	1st half.	123.15									123.15	
Ohio	2d half.	123.15										Ohio	2d half.	123.15									123.15	
Grand total		246.30										Grand total		246.30										
OREGON.																								
La Grande	1st half.	5,573.62	7,687.34	6,155.55	405	487.83	893.83	3,638.28	235	100.00	335.00	La Grande	1st half.	5,573.62	7,687.34	6,155.55	405	100.00	235	335.00	15,367.45	9,495.17	1,422.77	
La Grande	2d half.	2,160.02	3,541.50	7,362.94	470	530.72	1,009.72	7,003.03	440	180.00	629.00	La Grande	2d half.	2,160.02	3,541.50	7,362.94	470	180.00	440	629.00	18,527.99	5,886.72	2,624.91	
Total		7,733.64	11,228.84	13,518.49	875	1,017.55	1,902.55	10,643.31	675	280.00	965.00	Total		7,733.64	11,228.84	13,518.49	875	280.00	675	965.00	31,895.44	15,361.80	4,047.68	
Lake View	1st half.	1,411.58	1,844.47	1,596.83	100	71.80	171.80					Lake View	1st half.	1,411.58	1,844.47	1,596.83	100				3,008.39	2,392.10	1,200.73	
Lake View	2d half.	5,032.96	2,565.38	4,092.86	260	180.13	413.13	853.57	55	24.00	79.00	Lake View	2d half.	5,032.96	2,565.38	4,092.86	260	24.00	55	79.00	9,998.39	6,460.37	1,361.84	
Total		6,404.52	4,409.85	5,689.69	360	255.02	615.02	853.57	55	24.00	79.00	Total		6,404.52	4,409.85	5,689.69	360	24.00	55	79.00	13,007.78	7,852.47	2,562.57	
Oregon City	1st half.	812.49	2,408.45	11,123.38	700	1,051.28	1,811.28					Oregon City	1st half.	812.49	2,408.45	11,123.38	700				11,965.87	5,545.70	2,937.38	
Oregon City	2d half.	488.85	972.08	6,444.60	415	621.56	1,036.56					Oregon City	2d half.	488.85	972.08	6,444.60	415				6,931.52	2,671.15	2,530.00	
Total		1,329.22	3,380.53	17,568.07	1,115	1,672.84	2,847.84					Total		1,329.22	3,380.53	17,568.07	1,115				18,897.39	8,216.85	5,507.38	
Roseburg	1st half.	6,030.04	8,944.04	13,540.87	800	1,054.78	1,944.78					Roseburg	1st half.	6,030.04	8,944.04	13,540.87	800				19,588.91	11,471.76	2,890.56	
Roseburg	2d half.	3,867.94	5,668.82	11,613.76	590	674.24	1,244.24					Roseburg	2d half.	3,867.94	5,668.82	11,613.76	590				19,421.70	7,404.06	1,813.58	
Total		9,846.98	14,612.86	25,154.63	1,490	1,728.97	3,208.97					Total		9,846.98	14,612.86	25,154.63	1,490				35,010.61	18,875.83	4,204.14	

No. 2.—Statement of public lands sold for cash and entered under the homestead and timber-culture acts, &amp;c.—Continued.

States, Territories, and land offices.	Fiscal year 1870.	Sales of land for cash, and amount re- ceived therefor, including cash re- ceived on commut- ed homesteads.		Lands entered under the homestead acts, with amount of government fees, and registers' and receivers' commissions received thereon.		Lands entered under the timber-culture acts, with amount of government fees, and registers' and receivers' commis- sions received thereon.				Aggregate of acres disposed of.		Aggregate amount received from all sources.		Incidental ex- penses.
		Acres.	Amount.	Acres.	Fees.	Commis- sions.	Amount.	Acres.	Fees.	Commis- sions.	Amount.	Acres.	Amount.	
Oregon—Cont'd.	1st half.	2,424.08	\$3,611.12	4,904.34	\$315	\$348.00	\$653.00	2,710.58	\$185	\$39.00	\$215.00	10,630.00	\$6,010.62	\$2,428.00
	2d half.	1,345.89	2,833.13	7,407.73	325	388.50	729.50	2,830.13	185	89.00	263.00	11,592.06	6,406.71	2,826.46
	Total.	3,769.88	8,444.25	12,312.07	650	736.50	1,382.50	5,540.71	370	110.00	480.00	21,631.06	13,377.33	5,254.46
	Grand total.	29,144.34	42,126.33	74,251.95	4,540	5,420.88	9,960.88	17,046.59	1,100	414.00	1,514.00	120,442.88	62,704.37	21,596.23
UTAH.														
Salt Lake City.	1st half.	14,737.41	16,886.94	31,455.25	2,005	1,500.00	3,565.00	460.46	30	12.00	42.00	40,062.12	22,019.44	3,802.45
	2d half.	14,555.75	15,198.83	40,230.34	2,430	1,968.00	4,398.00	1,850.47	130	68.00	198.00	56,645.56	21,527.83	3,352.65
Grand total.	1st half.	29,293.16	32,085.77	71,685.59	4,435	3,468.00	7,963.00	2,328.93	160	80.00	240.00	103,307.68	43,547.27	7,245.10
	2d half.	14,737.41	16,886.94	31,455.25	2,005	1,500.00	3,565.00	460.46	30	12.00	42.00	40,062.12	22,019.44	3,802.45
WASHINGTON.														
Cedar.	1st half.	6,634.85	12,070.64	15,290.88	1,240	1,424.55	2,664.55	29,400.75	1,435	604.00	2,039.00	47,626.48	17,752.10	3,334.74
	2d half.	4,135.68	7,137.75	29,178.17	1,675	2,020.20	3,701.20	29,213.70	1,570	528.00	1,798.00	59,527.65	13,584.18	3,308.27
Total.	1st half.	11,070.53	19,208.39	47,469.05	2,915	3,444.75	6,365.75	42,614.45	2,705	1,132.00	3,837.00	107,154.03	31,336.27	6,703.01
	2d half.	5,303.22	9,813.56	19,218.67	1,260	1,528.50	2,788.50	29,213.70	1,570	528.00	1,798.00	59,527.65	13,584.18	3,308.27
Olympia.	1st half.	702.39	1,268.19	15,297.96	530	1,110.00	2,040.00	2,328.93	160	80.00	240.00	103,307.68	43,547.27	7,245.10
	2d half.	6,035.61	11,111.75	37,466.63	2,190	2,633.50	4,828.50	2,328.93	160	80.00	240.00	103,307.68	43,547.27	7,245.10
Total.	1st half.	7,738.00	13,380.14	32,566.63	2,720	3,143.25	7,154.25	24,614.15	2,275	1,660.00	4,077.00	166,661.73	56,881.45	10,951.11
	2d half.	5,303.22	9,813.56	19,218.67	1,260	1,528.50	2,788.50	29,213.70	1,570	528.00	1,798.00	59,527.65	13,584.18	3,308.27
Grand total.	1st half.	13,041.22	23,193.70	51,785.30	3,980	4,671.75	9,942.75	43,828.85	3,835	2,188.00	5,875.00	265,989.38	100,425.62	14,259.21
	2d half.	9,438.89	17,027.31	48,696.01	2,430	2,961.50	7,186.50	29,213.70	1,570	528.00	1,798.00	118,855.33	47,131.45	10,556.66
Grand total.	1st half.	22,480.11	40,221.01	100,481.31	6,410	7,633.25	17,129.25	73,042.55	5,405	2,716.00	7,673.00	384,844.71	147,557.07	24,815.87
	2d half.	14,737.41	16,886.94	31,455.25	2,005	1,500.00	3,565.00	460.46	30	12.00	42.00	40,062.12	22,019.44	3,802.45



Walla Walla.....	1st half.....	8,640.10	18,051.22	12,756.25	856	990.50	1,854.50	7,398.79	485	224.00	700.00	28,794.14	21,308.72	1,671.59
Walla Walla.....	2d half.....	9,064.08	10,078.06	10,872.83	1,220	1,407.00	2,027.00	3,414.80	860	373.00	1,232.00	42,372.37	21,820.96	3,301.85
Total.....		17,724.76	34,730.18	32,629.08	2,075	2,406.50	4,481.50	20,814.65	1,345	506.00	1,941.00	71,168.51	43,225.68	5,000.44
Grand total.....		30,834.54	69,768.47	141,484.79	8,440	10,197.20	18,037.20	66,990.82	4,300	1,860.00	0,160.00	245,310.15	101,510.07	22,321.63
WISCONSIN.														
Bayfield.....	1st half.....	1,339.75	2,980.23	3,434.05	215	167.70	383.70					4,773.80	8,408.83	903.03
Bayfield.....	2d half.....	3,239.24	5,946.18	2,584.45	125	90.00	221.00					5,823.60	0,307.18	1,113.82
Total.....		4,578.99	8,926.41	6,018.50	340	263.70	603.70					10,597.40	9,710.11	1,016.85
Eau Claire.....	1st half.....	1,084.47	1,955.04	13,109.92	910	890.58	1,800.58					14,254.39	3,975.12	1,901.92
Eau Claire.....	2d half.....	996.26	1,305.33	11,771.10	685	694.05	1,370.05					12,767.38	3,010.88	1,458.48
Total.....		2,080.73	3,320.37	24,941.02	1,595	1,584.63	3,170.63					27,021.75	6,986.00	3,360.40
Falls of Saint Croix.....	1st half.....	435.26	1,050.46	6,928.75	500	643.13	1,148.13					7,364.01	2,470.50	1,139.14
Falls of Saint Croix.....	2d half.....	489.93	1,219.12	7,890.89	540	481.00	1,021.00					8,380.82	2,473.12	1,713.93
Total.....		915.19	2,239.58	14,828.64	1,040	1,129.13	2,169.13					15,753.83	4,943.71	2,853.12
La Crosse.....	1st half.....	583.41	804.51	6,684.36	505	393.87	900.87					7,297.77	1,830.23	972.93
La Crosse.....	2d half.....	819.61	1,439.03	6,332.21	410	619.88	1,029.88					7,171.82	2,622.81	1,275.32
Total.....		1,403.02	2,243.54	13,016.57	915	1,015.75	1,930.75					14,439.59	4,453.04	2,248.25
Menasha.....	1st half.....	1,357.83	1,807.33	15,801.29	1,095	478.71	1,573.71					17,249.12	3,703.04	1,398.81
Menasha.....	2d half.....	3,904.76	4,980.95	14,456.58	975	407.61	1,382.61					18,361.34	6,708.06	1,418.43
Total.....		5,262.59	6,788.28	30,347.87	2,070	886.32	2,956.32					35,610.46	10,531.10	2,817.24
Wausau.....	1st half.....	481.73	843.06	14,239.43	1,020	663.20	1,683.20					14,721.16	2,810.77	1,404.86
Wausau.....	2d half.....	582.49	784.92	12,608.05	860	612.04	1,472.04					13,191.14	2,596.46	1,482.23
Total.....		1,064.22	1,627.98	26,848.08	1,880	1,275.30	3,155.30					27,912.30	5,407.23	2,946.70
Grand total.....		15,314.74	25,146.16	116,020.68	7,840	6,154.83	13,994.83					131,335.42	42,037.19	16,142.62
WYOMING.														
Cheyenne City.....	1st half.....	8,763.13	9,515.51	1,690.06	115	105.00	220.00					10,473.18	3,810.51	755.33
Cheyenne City.....	2d half.....	10,288.20	3,362.00	2,799.42	180	138.00	318.00					13,087.62	3,740.00	774.94
Total.....		19,071.33	6,877.51	4,488.47	295	243.00	538.00					23,560.80	7,550.51	1,530.27

States, Territories, and land offices.	Fiscal year 1879.	Sales of land for cash, and amount re- ceived therefor, including cash re- ceived on commu- ed homesteads.				Lands entered under the homestead acts, with amount of government fees, and registrars' and receivers' commissions received thereon.				Lands entered under the timber-culture acts, with amount of government fees, and registrars' and receivers' commis- sions received thereon.				Aggregate of acres disposed of.		Aggregate amount received from sources.		Incidental ex- penses.				
		Acres.	Amount.	Acres.	Fees.	Commis- sions.	Amount.	Acres.	Fees.	Commis- sions.	Amount.	Acres.	Amount.	Acres.	Amount.	Acres.	Amount.					
WYOMING—Cont'd.																						
Evansville.....	1st half	7,840.00	\$1,990.00	80.00	\$5.	\$0.00	\$11.00	.....	.....	.....	.....	7,920.00	\$2,007.00	.....	\$018.70	.....	.....	.....	.....			
Evansville.....	2d half	1,529.84	862.45	320.00	20	18.00	38.00	.....	.....	.....	.....	1,849.84	949.45	.....	\$34.00	.....	.....	.....	.....			
Total.....		9,369.84	2,852.45	400.00	25	28.00	49.00	.....	.....	.....	.....	9,769.84	2,956.45	.....	1,070.70	.....	.....	.....	.....			
Grand total.....		28,441.17	9,699.96	4,880.47	320	297.00	287.00	.....	.....	.....	.....	33,330.64	10,505.96	.....	2,608.97	.....	.....	.....	.....			

DEPARTMENT OF THE INTERIOR, GENERAL LAND OFFICE, October 30, 1879.

## RECAPITULATION.

States and Territories.	1		2					3			4	5	6
	Acres.	Amount.	Acres.	Fees.	Commissions.	Total.	Acres.	Fees.	Commissions.	Total.			
	Land entered under the homestead acts, with amount of government fees, and receivers' commissions received thereon.												
Alabama.....	4,610.10	\$7,000.67	158,162.89	\$10,850	\$6,875.75	\$17,725.75	3,280.09	\$205	\$84.00	\$289.00	162,772.09	\$14,075.72	
Arizona Ter.....	19,861.53	1,860.11	5,038.97	335	\$6,272.50	6,272.50					28,301.50	3,411.31	
Arkansas.....	5,512.53	1,860.11	203,343.70	14,303	8,385.40	22,835.40					208,853.96	16,844.08	
California.....	141,287.91	213,430.22	223,014.29	14,303	10,060.93	30,365.03	15,613.81	1,020	456.00	1,476.00	379,821.01	48,342.14	
Colorado.....	23,556.10	49,707.52	63,302.42	4,185	4,765.50	8,950.50	15,962.03	1,045	472.00	1,517.00	276,505.42	32,961.57	
Dakota Ter.....	58,027.68	111,069.67	867,713.65	54,310	29,051.53	83,461.53	731,867.73	46,205	13,732.00	64,937.00	1,607,611.06	68,472.02	
Florida.....	8,184.89	8,119.65	87,400.38	3,970	2,253.20	6,223.20					90,845.47	30,920.53	
Iaho Ter.....	17,379.88	17,379.88	52,772.47	3,455	2,379.80	5,814.80	22,634.68	1,495	644.00	2,139.00	14,451.75	7,037.90	
Iowa.....	1,892.13	2,571.22	3,173.31	250	2,541.80	2,791.80	6,577.25	500	332.00	832.00	11,000.60	6,706.83	
Indian.....													
Illinois.....		140.66											
Kansas.....	20,325.06	74,938.41	1,580,223.61	98,540	64,508.04	163,136.04	1,115,639.12	72,206	30,647.00	103,853.00	2,784,538.39	47,637.24	
Louisiana.....	872.92	1,099.02	28,531.90	1,900	1,854.37	3,754.37					27,464.05	5,654.48	
Michigan.....	7,680.90	14,331.50	157,940.21	10,530	7,285.00	17,815.00					163,630.13	12,732.80	
Minnesota.....	40,075.10	83,978.14	638,169.88	38,319	34,174.09	72,489.09	257,552.50	16,234	6,147.00	24,381.00	835,788.48	45,537.19	
Mississippi.....	1,896.90	2,711.17	10,338.52	1,457	1,456.00	2,912.00					21,237.42	6,406.67	
Missouri.....	1,437.72	2,711.92	39,428.27	2,825	2,659.77	5,484.77					40,862.39	7,629.37	
Montana Ter.....	44,928.74	22,572.63	18,063.43	1,175	1,467.00	2,642.00	3,134.20	215	108.00	323.00	66,154.37	8,701.00	
Nebraska.....	11,861.42	22,470.76	703,851.35	43,830	34,002.23	77,822.23	465,968.91	29,940	12,724.00	42,664.00	1,181,681.68	27,832.26	
Nevada.....	32,899.12	17,244.93	10,359.83	865	703.50	1,308.50					13,409.04	5,210.37	
New Mexico Ter.....	22,627.56	21,010.19	12,638.82	810	588.50	1,396.50	1,891.93	125	56.00	181.00	37,338.31	6,360.53	
Ohio.....													
Oregon.....	20,144.34	42,120.33	74,251.95	4,540	6,420.88	9,960.88	17,046.59	1,100	414.00	1,514.00	120,442.88	21,506.28	
Utah Ter.....	29,293.16	32,085.77	71,686.52	4,435	3,528.00	7,963.00	2,328.93	169	80.00	240.00	63,704.37	7,245.17	
Washington Ter.....	30,824.64	99,768.47	141,484.79	8,440	10,197.20	18,657.20	68,990.82	4,309	1,860.00	6,160.00	245,310.15	27,351.63	
Wisconsin.....	15,314.74	53,146.16	116,020.68	7,420	6,154.83	13,064.83					131,333.42	16,143.62	
Wyoming Ter.....	28,411.17	6,600.96	4,899.47	7,220	267.00	587.00					33,330.04	2,600.97	
Grand total.....	622,573.06	894,840.83	5,200,111.20	31,834	247,170.92	578,704.02	2,706,573.93	175,765	74,764.00	250,539.00	8,650,219.18	1,875,155.86	400,864.59

NOTE.—Column No. 4 includes 960.00 acres located with agricultural college scrip.

DEPARTMENT OF THE INTERIOR, GENERAL LAND OFFICE, October 30, 1879.



## SWAMP LANDS.

No. 3.—Statement exhibiting the quantity of land selected for the several States of Congress approved March 2, 1849, September 28, 1850 (Revised Statutes of the United States, section 2479), and March 12, 1860 (Revised Statutes of the United States, section 2490), up to and ending June 30, 1879.

States.	Third quarter of 1878.	Fourth quarter of 1878.	First quarter of 1879.	Second quarter of 1879.	Year ending June 30, 1879.
	<i>Acres.</i>	<i>Acres.</i>	<i>Acres.</i>	<i>Acres.</i>	<i>Acres.</i>
Alabama.....					
Arkansas.....					
California.....	14,433.31				14,433.31
Florida.....					
Illinois.....					
Indiana.....					
Iowa.....					
Louisiana (act of 1849).....				12,599.86	12,599.86
Louisiana (act of 1850).....					
Michigan.....					
Minnesota.....	2,680.68	439,133.13			441,813.81
Mississippi.....					
Missouri.....					
Ohio.....			9,609.29		9,609.29
Oregon.....					
Wisconsin.....					
Total.....	17,119.99	439,133.13	9,609.29	12,599.86	478,462.27

No. 4.—Statement exhibiting the quantity of land approved to the several States of Congress approved March 2, 1849, September 28, 1850 (Revised Statutes of the United States, section 2479), and March 12, 1860 (Revised Statutes of the United States, section 2490), up to and ending June 30, 1879.

States.	Third quarter of 1878.	Fourth quarter of 1878.	First quarter of 1879.	Second quarter of 1879.	Year ending June 30, 1879.
	<i>Acres.</i>	<i>Acres.</i>	<i>Acres.</i>	<i>Acres.</i>	<i>Acres.</i>
Alabama.....					
Arkansas.....				8,277.88	8,277.88
California.....	14,433.31				14,433.31
Florida.....					
Illinois.....					
Indiana.....			880.16		880.16
Iowa.....	40.00		40.00		80.00
Louisiana (act of 1849).....					
Louisiana (act of 1850).....					
Michigan.....					
Minnesota.....			14,622.08		14,622.08
Mississippi.....					
Missouri.....				6,399.14	6,399.14
Ohio.....	20.00				20.00
Oregon.....					
Wisconsin.....					
Total.....	14,493.31		15,542.24	14,677.02	44,712.57



No. 5.—Statement exhibiting the quantity of land patented to the several States under the acts of Congress approved September 28, 1850 (*Revised Statutes of the United States*, section 2479), and March 12, 1860, (*Revised Statutes of the United States*, section 2490), and also the quantity certified to the State of Louisiana under act approved March 2, 1849.

States.	Third quarter of 1878.	Fourth quarter of 1878.	First quarter of 1879.	Second quarter of 1879.	Year ending June 30, 1879.	Total since date of grant.
	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.
Alabama.....						395,315.09
Arkansas.....						7,121,953.48
California.....				160.00	160.00	1,413,393.71
Florida.....		29,509.75			29,509.75	10,764,912.96
Illinois.....						*1,453,891.67
Indiana.....				916.45	916.45	†1,257,588.41
Iowa.....						‡1,173,955.74
Louisiana (act of 1849).....						§8,201,225.31
Louisiana (act of 1850).....						¶217,274.84
Michigan.....						5,657,817.19
Minnesota.....	1,037.75	41,362.17			42,399.92	1,350,886.32
Mississippi.....						2,681,383.16
Missouri.....				2,401.96	2,401.96	3,304,199.37
Ohio.....						25,640.71
Oregon.....						4,449.54
Wisconsin.....						¶3,071,419.61
Total.....	1,037.75	70,871.92		3,478.41	75,388.08	48,194,307.11

\*2,369.07 acres of this contained in indemnity patents under act of March 2, 1855.

†4,880.20 acres of this contained in indemnity patents under act of March 2, 1855.

‡321,468.23 acres of this contained in indemnity patents under act of March 2, 1855.

§18,903.93 acres of this contained in indemnity patents under act of March 2, 1855.

¶37,062.23 acres of this contained in indemnity patents under act of March 2, 1855.

||24,910.75 acres of this contained in indemnity patents under act of March 2, 1855.

NOTE.—The tables showing the disposition of lands under the swamp grants have heretofore been made to include the year ending September 30th, and also to show the amount of land disposed of during the fiscal year. As this has led to confusion, they are now made to show only the work of the fiscal year.

No. 5.—Condition of bounty-land business under acts of 1847, 1850, 1852, and 1855 the issues and locations with bounty-land warrants, and the number outstanding commencement of operations under said acts to June 30, 1879.

Grade of warrants.	Number issued.	Acres embraced thereby.	Number located.	Acres embraced thereby.	Number outstanding.
Act of 1847, 160 acres .....	80,608	12,906,560	78,060	12,633,600	1,706
Act of 1847, 40 acres .....	7,883	303,320	7,006	282,640	517
Total .....	88,249	13,209,880	86,026	12,916,240	2,223
Act of 1850, 160 acres .....	27,438	4,390,080	26,781	4,284,960	657
Act of 1850, 80 acres .....	57,712	4,616,960	56,173	4,493,840	1,529
Act of 1850, 40 acres .....	103,971	4,158,840	100,455	4,018,200	3,516
Total .....	189,121	13,165,880	183,409	12,797,000	5,712
Act of 1852, 160 acres .....	1,223	195,680	1,191	190,560	32
Act of 1852, 80 acres .....	1,698	135,840	1,660	132,800	38
Act of 1852, 40 acres .....	9,064	362,560	8,873	354,920	191
Total .....	11,985	694,080	11,724	678,280	261
Act of 1855, 160 acres .....	114,402	18,304,320	108,313	17,330,080	6,089
Act of 1855, 120 acres .....	96,903	11,635,560	90,219	10,826,240	6,744
Act of 1855, 100 acres .....	6	600	5	500	1
Act of 1855, 80 acres .....	49,427	3,954,160	47,780	3,822,400	1,647
Act of 1855, 60 acres .....	339	21,540	309	18,540	50
Act of 1855, 40 acres .....	540	21,600	464	18,560	76
Act of 1855, 10 acres .....	5	50	3	30	2
Total .....	261,702	33,937,830	247,093	32,616,390	14,609
SUMMARY.					
Act of 1847 .....	88,249	13,209,880	86,026	12,916,240	2,223
Act of 1850 .....	189,121	13,165,880	183,409	12,797,000	5,712
Act of 1852 .....	11,985	694,080	11,724	678,280	261
Act of 1855 .....	261,702	33,937,830	247,093	32,616,390	14,609
Total .....	551,057	61,007,670	528,252	58,407,910	22,805

DEPARTMENT OF THE INTERIOR, GENERAL LAND OFFICE,  
October 8, 1879.

## REPORT OF THE AUDITOR OF RAILROAD ACCOUNTS

DEPARTMENT OF THE INTERIOR,  
OFFICE OF AUDITOR OF RAILROAD ACCOUNTS

Washington, D. C., November 1,

SIR: In compliance with the requirements of law (20 U. S. S. 170), I have the honor to submit the following report on the condition of the property, business, and accounts of the several railroad companies to which the United States have granted subsidies in the public lands, and the geographical location of whose roads is "in whole or in part west, north, or south of the Missouri River."

GENERAL REVIVAL OF BUSINESS, ESPECIALLY ON WESTERN RAILROADS.

In the performance of official duties many of the railroads in the Eastern, Western, and Pacific States, and in the Territories, have been over by me during the last year, to an extent of more than two thousand miles of travel. Business improvement and increasing



and intelligence everywhere indicate the rapid progress we are making as a nation: In no portion of the country, however, does the evidence of returning prosperity appear to be so positive or the movement of population so extensive as in the States of Kansas, Nebraska, Colorado, and Oregon. In many parts of those States towns have grown up with a rapidity almost without parallel—considerable settlements of a few weeks' age being no uncommon phenomena—and the growth is of such a character as to insure permanent improvement to the business both of the railroads and the country adjacent; they are not the movable towns which exist upon railroad construction. To a certain extent these rising towns are the result of an energetic and liberal effort on the part of railroad companies to obtain more business, and show what is possible when harmonious relations are established between the railroads and the people. Liberal views of each other's obligations and a spirit of forbearance and concession on both sides must tend to mutual advantage. The railroad is the great civilizer of modern times.

In the revival of commerce, industry, and production now in progress, no single element composing or aiding it has been so marked as the impetus given to railroad construction and extension and the increase of freight traffic, carrying with it increased activity in all related industries. This is due, perhaps, not alone to the resumption of specie payments, but to a combination of circumstances.

A restrictive and perhaps too rigid economy in railroad management, operating through several years, but more especially since 1873, has given cheaper and better service; but in many cases—more so in the West than in the East—at the expense of future renewals, which, with a due regard to the safety of travel and the ultimate value of the properties themselves, could now no longer be postponed; hence the rolling-mills, founderies, and machine-shops East and West are tested to their utmost capacity in filling orders for rails, equipment, machinery, and other railroad supplies, causing a large advance in prices.

A more equitable and more practical view of the obligations existing between railroad companies as competitors for traffic, as well as of those existing between the railroad companies and their customers, has led to a certain steadiness of rates, the maintenance of which cannot but prove advantageous alike to producer, merchant, and carrier, making business more profitable and profits more certain.

The abundant and yearly increasing harvests, especially of the grain-growing States of the West, accompanied by a demand for the surplus at good prices, together with the rich development of the mineral wealth of the same section, have undoubtedly been prime factors in this great improvement in business.

These and other causes, aiding or aided by a returning confidence in the stability of values, assured as that is by the accomplished fact of resumption of specie payments, working together, constitute in a large degree the basis of the better railroad business, as well as of the "better times" of the country at large.

Nowhere have these facts and results been so apparent as in the country lying between the Mississippi River and the Rocky Mountains, along the lines of railroad traversing that section, and further west. As exhibited more in detail in Appendix M of this report, the statistics of operation of certain railroads show the increase of railroad construction, business, and profit, during the year 1878, to be largely in favor of those west of the Mississippi, and there is every reason to believe that the present year will show results still more surprising. The following summary affords some idea of the improvement which has taken place in railroad business generally, especially in freight traffic. It will also be observed

that notwithstanding the large increase in population—which is estimated at about twelve per cent.—from 1873 to 1878, and the facilities afforded for travel, as well as some reduction in rates, *passenger travel has decreased* rather than increased, indicating, *first*, that the people have been limited in the means they could spare for travel, and, *second*, that the railroad companies have not yet mastered the business of passenger transportation, so as to induce a maximum of travel at a minimum of cost, there being no apparent reason why passenger travel should not steadily increase with the increase of population. It becomes more profitable to the railroad companies from year to year.

Railroads west of the Mississippi.				Items.	Railroads east of the Mississippi.		
Year 1878.	Year 1873.	Increase.	Decrease.		Year 1878.	Year 1873.	Increase.
12,201	9,682	2,519	.....	Miles operated.....	12,364	11,208	1,156

Numbers, quantities, and amounts below are stated in thousands.

17,821	11,655	6,166	.....	Passengers .....	80,118	83,993	.....
724,020	603,895	121,025	.....	Passengers one mile .....	1,795,264	2,044,513	.....
\$20,667	\$21,335	.....	.....	Passenger earnings .....	\$41,307	\$50,236	.....
2.85 cts.	3.53 cts.	.....	.....	Rate per pass. per mile .....	2.31 cts.	2.48 cts.	.....
10,027	12,943	.....	.....	Tons of freight .....	67,038	60,823	6,215
3,488,918	2,140,934	1,347,984	.....	Freight tons one mile .....	9,468,220	7,160,977	2,307,243
\$60,995	\$47,955	\$13,040	.....	Freight earnings .....	\$97,094	\$118,840	.....
1.748 cts.	2.239 cts.	.....	.....	Rate per ton per mile .....	1.025 cts.	1.6 cts.	.....
\$90,085	\$76,555	\$13,530	.....	Gross earnings .....	\$355,490	\$193,508	.....
\$46,118	\$41,864	\$4,254	.....	Operating expenses .....	\$96,844	\$126,254	.....
\$43,967	\$34,691	\$9,276	.....	Net earnings .....	\$58,646	\$67,254	.....

A noteworthy instance of the effect of the movement of population and large crops in the State of Kansas, and the development of wealth in Colorado, is that of the Atchison, Topeka and Santa Fe Railroad Company.

This company owns one of the most richly-endowed land-grant roads, extending from Atchison to the western boundary of the State of Kansas.

As evidenced by the gradual and steady increase of its business profits, the company has adopted a wise and liberal policy in the sale of its lands and the permanent settlement of the country along the line of its road.

#### ATCHISON, TOPEKA AND SANTA FÉ RAILROAD.\*

Items.	1873.	1874.	1875.	1876.	1877.
Miles operated.....	509	539	547	607	739
(Numbers, quantities, and amounts below are stated in thousands.)					
Passengers carried .....	79	70	73	134	166
Passengers carried one mile .....	6,836	7,598	7,167	17,031	22,000
Passenger earnings .....	\$346	342	337	716	778
Rate per passenger per mile .....	5c.	4.50c.	4.70c.	4.20c.	3.36c.
Tons of freight carried .....	156	186	232	326	375
Tons of freight carried one mile .....	24,958	27,495	46,245	61,791	72,711
Freight earnings .....	\$205	836	1,117	1,688	1,835
Rate per ton per mile .....	3.22c.	3.04c.	2.41c.	2.73c.	2.55c.
Gross earnings .....	\$1,217	1,251	1,520	2,487	2,671
Expenses .....	786	558	699	1,176	1,309
Net earnings .....	431	693	821	1,311	1,362

\* Although the figures given in the above statement and in others incorporated in this report have been compared with and corrected by the returns of the railroad companies.



From this exhibit of the business of the Atchison, Topeka and Santa Fé Railroad Company it appears, by comparing results for 1878 with the average of the previous five years, that the number of passengers has *increased* 65 per cent., mileage of passengers has *increased* 100 per cent., earnings from passengers have *increased* 50 per cent., passenger rates have *decreased* nearly 30 per cent., number of tons of freight carried has *increased* 80 per cent., ton mileage has *increased* 120 per cent., freight earnings have *increased* 70 per cent., freight rates have *decreased* 25 per cent.; it also appears that "gross earnings" have more than kept pace with "expenses"; the former having *increased* 65 per cent., while the latter have *increased* but 60 per cent., and that "net earnings" have *increased* nearly 70 per cent.

As a still further illustration of the progress of railroad construction in the West, it may be stated approximately that for the ten months ending October 31 in each year there has been built of new railroad as follows:

	Miles.
Ten months in 1879.....	2,900
1878.....	1,700
1877.....	1,800
1876.....	1,900
1875.....	1,100
1874.....	1,500

and that of the 2,900 miles constructed in the first ten months of 1879 over 2,000 miles are west of the Mississippi. The increase of railroad mileage in the whole country since 1873 may be approximately divided as follows, viz:

Miles built.	East of Mississippi River.	West of Mississippi River.	Total.
To October 31, 1879.....	60,000	25,000	85,000
To December 31, 1873.....	52,500	18,000	70,500
Increase in five years and ten months.....	7,500	7,000	14,500
Percentage of increase.....	14.28	38.88	20.56

#### NECESSITY FOR THE BUREAU.

In the Report of this bureau for the year 1878, pages 5 to 13, inclusive, some remarks were made relative to the causes which led to its establishment.

panies, it is due to Mr. Henry V. Poor that the greatly improved character of his "Manual of the Railroads of the United States for 1879," over those of former years, be mentioned, and the valuable aid it has been to this office acknowledged.

Speaking of railroad reports generally, Mr. P. makes the following remark in his preface:

"While, as a rule, the railroad companies very readily furnish the information required, there are still a considerable number which either refuse it altogether, or supply it sparingly and grudgingly. Where the information given by us does not come up to the general standard we have adopted, it is to be remembered that the fault is not our own. Where the statements of the companies are not satisfactory, those interested would confer a great favor, both upon ourselves and the public, by joining with us in a demand for more satisfactory ones. The refusal of information should, as a rule, be taken as evidence that, if communicated, it would tell strongly against the company or persons refusing it."

Since then it has been found, upon examination into the action of the accounts between the Pacific Railroad Companies and the government, that in order to have them correctly settled, and in accordance with the decisions of the Supreme Court, considerable work and time will be required on the part of the companies' accounting-officers, and this bureau.

The accounts for transportation, many of which will require settlement and readjustment, go back to the very beginning of the service performed for the government, and involve an amount of more than \$18,000,000 of compensation.

The causes for this condition of the accounts are manifold and varied. Until the present year, by the decision of the Supreme Court of the United States in what are known as the "Five per cent. cases," there has been no authoritative interpretation of the law as to what services the railroad companies were entitled to payment for in full or otherwise. In the present year, there was not enough money in an appropriation to enable the government to settle accounts for transportation to be settled and paid as well as the accounts of the Pacific Railroad Companies, the latter were left unsettled and suspended. In many settlements made by the accounting-officers, differences or disallowances have been found, and the companies have not having been notified or not having received the notification of the same, the United States remains charged with the original amount in their books. Where services have been rendered by the companies, part on subsidized and part on unsubsidized railroad, the whole amount of compensation, in numerous instances, has been covered by the Treasury, irrespective of such difference. Considerable passenger service has been performed by government officers and employés on these railroads, for the present year, has been paid for in money by the purchase of through tickets at the East, and the proportion which these companies have received has, in many cases, been charged to them by the accounting-officers, necessitating collection of the same or restatement of the accounts. In the final settlement with each company—while in other cases the accounts have been passed without charges being made against the companies, and the law of 1873 rendered void to that extent. The compensation for mail service on the Central Pacific Railroad from Ogden to San Francisco since July 1, 1878, having been disposed of by covering one-half to the credit of interest paid by the United States and the other half to the credit of the sinking fund established by the act of July 2, 1864, 1878, and the *subsidized* mileage of that route being 798.80, the total mileage is 894.64, a redisposal or resettlement of the accounts of the company for such service will be required; and so long as the present practice continues the work of correction must accumulate. In a report made to this office by the Sioux City and Pacific Railroad Company, it appears that that company has been paid in full for transportation of the mails to December 31, 1872, as well as for service performed by it, in all to the amount of \$30,162.58, notwithstanding the fact that the act of Congress approved July 2, 1864, section 3590, U. S. Statutes, 359), required that "one-half of the compensation for services rendered for the government by said companies shall be applied to the payment of the bonds issued by the government in aid of the construction of said roads."

These and other facts which might be enumerated show the necessity of some supervision in regard to the settlement of these accounts by the accounting-officers, more so now than before, owing to the complexity of law and decisions relating to the companies. The accounts for services performed by the Pacific Railroad Companies might be re-

the several accounting officers to this office, or, perhaps better, to the First Auditor of the Treasury, for revision, record, and report, before issue of the requisition for payment, so that the Secretary of the Treasury could be informed as to the disposal of the same according to law.

In the event of the latter plan being adopted, it might be advisable to have all the accounts rendered by the companies forwarded through this office to the accounting officers.

In this or some similar way only can the interests of the government be protected or a consolidated account of the services of these companies be kept. The several Auditors of the Treasury being entirely independent of each other, no one is authorized by law to consolidate these accounts. The recommendation for legislation in this respect is made in another part of the report.

#### THE RAILROAD COMPANIES INCLUDED IN THE ACT.

The names of the companies which now own or operate the subsidized and land-grant railroads located within the limits fixed in the act of Congress approved June 19, 1878, are given in Appendix A, together with the names of the companies which obtained the subsidy or land-grant.

The following classification of these companies has been made, viz:

First. Corporations to which bonds have been loaned, and to which grants of lands, right of way, depot grounds, and materials from adjacent lands of the United States have been made, consisting of the Union Pacific Railroad Company; Central Pacific Railroad Company (including the Western Pacific, which company was consolidated with the Central Pacific June 23, 1870); Kansas Pacific Railway Company; Central Branch Union Pacific Railroad Company, and the Sioux City and Pacific Railroad Company.

Second. Corporations to which bonds have *not* been loaned, but to which, or to their predecessors, grants of lands, right of way, depot grounds, and materials from adjacent lands of the United States have been made, consisting of the Burlington and Missouri River Railroad Company in Nebraska, Denver Pacific Railway and Telegraph Company, Texas and Pacific Railway Company, Southern Pacific Railroad Company, Northern Pacific Railroad Company, Atlantic and Pacific Railroad Company, Saint Louis and San Francisco Railway Company (successor to a portion of the grant to the Atlantic and Pacific Railroad Company), California and Oregon Railroad Company (consolidated with the Central Pacific August 22, 1870), Oregon and California Railroad Company, and the Oregon Central Railroad Company.

Third. The present owners or operators of railroads, to aid in the construction of which lands, right of way, depot grounds, and materials have been granted by the United States to the States in which the respective railroads are located, consisting of the Hannibal and Saint Joseph Railroad Company; Missouri Pacific Railroad Company; Saint Louis, Iron Mountain and Southern Railway Company; Little Rock and Fort Smith Railway Company; Memphis and Little Rock Railroad Company; Missouri, Kansas and Texas Railway Company; Atchison, Topeka and Santa Fé Railroad Company; Kansas City, Lawrence, and Southern Railroad Company; Saint Joseph and Western Railroad Company; Chicago, Burlington and Quincy Railroad Company; Chicago, Rock Island and Pacific Railroad Company; Cedar Rapids and Missouri River Railroad Company; Dubuque and Sioux City Railroad Company; Iowa Falls and Sioux City Railroad Company; Saint Paul and Sioux City Railroad



Company; Chicago, Milwaukee and Saint Paul Railroad Company; Wisconsin Central Railroad Company; Chicago, Saint Paul and Milwaukee Railroad Company; North Wisconsin Railroad Company; Wisconsin Saint Peter Railroad Company; Southern Minnesota Railway Company; Saint Paul and Duluth Railroad Company; Saint Paul, Minneapolis and Manitoba Railroad Company; Stillwater and Saint Paul Railroad Company; Saint Paul, Stillwater and Taylor's Falls Railroad Company; Vicksburg, Shreveport and Texas Railroad Company; Morgan's Louisiana and Texas Railroad Company.

#### THE FORM OF REPORT ADOPTED BY THE BUREAU

In order to simplify for the companies the work of reporting to the office, and to keep the expense to them within reasonable limits, after careful consideration and communication had with railroad experts and accountants upon the subject, it has been decided to reduce the report to a single general return, to be made semi-annually on December 31st and June 30th of each year. The form (a copy of which is given in Appendix B) requires report of such facts and information as railroad companies generally should be able to give without much trouble than the mere clerical work of copying their own records. When once given, certain details need not be repeated in future years.

The method adopted by railroad companies in keeping their books and statistical records is found to vary according to the extent and character of their business and property and the real or apparent need for information as may be determined by their managers.

The individuality of a manager, superintendent, or auditor often shows itself strongly in railroad accounting. For example, the Atchafalaya and Santa Fé, a comparatively new western railroad company, having some nine hundred (900) miles of railroad, make a very elaborate report of their property, business, and financial condition, giving much detail omitted by many other companies, while in their regular report to stockholders one of the best issued; and in this manner, the Lake Shore and Michigan Southern report is full of complete and detailed information; while, on the other hand, many companies, operating extensive railroads, issue reports bare of facts and detail necessary to give any idea of the character and extent of their business or even of their financial condition.

True, statistics may be made a hobby, and such work carries extremes, but even then it probably pays the company for all the trouble. The report of the Louisville and Nashville Railroad Company for the year 1874—when Mr. Albert Fink was vice-president and general manager—extends over 156 pages of nonpareil type for the most part, and contains a multitude of details necessary to determine with exactness the cost of transportation of various kinds on different lines, and is probably the best exhibit of operations ever presented by a railroad company in an annual report. Whatever expense it may have been to the company, however, is more than repaid, by knowing just what it costs to maintain work, where to retrench, or where to improve, as well as the prospective bearing upon the future and more permanent interests of the company.

In this matter it might be well to have some line drawn, perhaps by State or National authority, so that certain information necessary for a stockholder or creditor to know the condition of a company's property and affairs, or such as may be required for the State or National legislatures, can be easily and promptly furnished.



chief reason for this is, that unless reports of railroad companies are *uniform* as to time and facts they are almost valueless for publication or comparison.

In addition to the semi-annual report referred to, a monthly statement is required from all of the companies, giving *earnings* (under five principal heads), *expenses* (under the ordinary five items of classification), and *miles operated* for the current and previous year. This statement will afford some idea of the business and profits as they progress from month to month; and when a sufficient number of the companies which are required to report to this office have decided to forward these simple monthly statements promptly, a monthly circular giving the information will be published for general use.

From the Pacific Railroad Companies, those to which subsidy bonds have been loaned, a monthly report on Form No. 1, showing the condition of every account on the general ledger, is required, as at first.

It is believed that the forms adopted as above referred to conform to the conditions which were decided upon when first the bureau went into operation, and which are still considered the only correct principles which should govern in this matter, viz: (1) *That the reports should be practical and simple, stating facts*; (2) *that the number and frequency of reports should be reasonable*; and (3) *that the matters reported should be useful and necessary both to stockholder and creditor*. It is expected, as a matter of course, that every company will have its books kept on the simple principles of true and honest bookkeeping, by having every transaction as it occurs entered with its proper debit and credit, whether it be a liability or mere receipt or expenditure of money.

This being so, there is no reason for any particular form of bookkeeping to be imposed upon railroad companies.

#### LAWS RELATING TO THE PACIFIC RAILROAD COMPANIES.

A full and correct compendium of the laws of the United States relating to the Pacific Railroad Companies, those subsidized by money or lands under the act of Congress approved July 1, 1862, and the acts amendatory thereof, has long been needed for reference and use in all of the departments of the government.

Many officers and employes of the government, in ignorance of these laws, especially the prohibitory sections now in force, have often paid full fares in cash on these railroads, complicating the settlement of the disbursing officers' accounts; and in other cases the disbursement has been passed and the government received nothing to credit of interest paid.

In the adjustment of the accounts of these companies at this particular time a full knowledge of these laws is absolutely necessary to a correct and legal settlement.

For these reasons, among others, the compendium referred to has been made part of this report, as Appendix C.

Among the laws relating to these railroads which were passed during the fiscal year ending June 30, 1879, was one (20 United States Statutes, 420) by which the Secretary of the Treasury was authorized "to make such entries upon the books of the department as will carry to the credit of said companies the amounts so earned or to be earned by them during each fiscal year," &c. This law was passed simply and wholly for the purpose of enabling the accounting officers to go on and settle the accounts which had for years been suspended for lack of appropriations and have them stated on their books now, when the facts are better known and the accounts themselves more readily and easily examined.

In the appropriation for payment of judgments of the Court of (20 United States Statutes, 411) "to the Denver Pacific Railroad Telegraph Company, \$58,260, or so much thereof as may be needed is one of the items named, this being in accordance with the decision of the Supreme Court, by which it is held that the company named is liable for the debt of the Kansas Pacific.

In the deficiency appropriation act approved March 3, 1879 (20 United States Statutes, 423), the claims of the Union Pacific, Central Kansas Pacific, Western Pacific, and Sioux City and Pacific Railroad Companies are excepted from payment out of the appropriation "Army transportation," &c., in accordance with previous law.

#### RECENT LEGISLATION IN REGARD TO LAND-GRANT RAILROADS

The sundry civil appropriation act, approved March 3, 1879, contains the following legislation, viz:

For the payment of arrears of Army transportation due such land-grant railroads that have not received aid in government bonds, as compensation was withheld from the acts of June sixteenth and twenty-second, eighteen hundred and seventy-five, and March third, eighteen hundred and seventy-five, to be adjusted by the proper officers in accordance with the decision of the Supreme Court in cases decided under the said acts, to be paid as other Army transportation, but in no event shall more than fifty per cent. of the full amount allowed by the Quartermaster-General be paid, until the decision of the Court of Claims be had in each case, three hundred thousand dollars, or so much thereof as may be necessary.

The question involved in this legislation was referred to in my report, pages 28 and 29, and affects twenty-seven of the railroads within the limits covered by the law establishing this bureau, and is defined by Appendix E, "conditions E and F," and seventeen other railroads east of the Missouri River.

In addition to the statement, given as Appendix L of my last report, I have prepared to show what the "fair deduction" from tariff rates should be. This statement is now given as Appendix L of this report, showing the basis of the rentals of leased railroads in many parts of the country, and that "the use of a railroad free from toll or other charge" is worth to the owner forty-five to seventy-five per cent. of the gross earnings.

#### DECISIONS OF THE SUPREME COURT OF THE UNITED STATES IN CASES AFFECTING THE PACIFIC RAILROAD COMPANIES.

Five of the more important decisions of the Supreme Court of the United States in cases affecting the Pacific Railroad Companies are here printed in full in Appendix D of this report, as well as a synopsis of the decisions in all other cases relating to them.

During the October term of 1878 the Supreme Court rendered the following decisions in regard to these railroad companies:

First. The case of "The United States *vs.* Union Pacific Railroad Company," known as the "Credit Mobilier" case, in which the decision was adverse to the government, although the constitutionality of the law (17 U. S. Statutes, 509) under which the suit was brought was affirmed by the court.

Second. The respective suits in which the Union Pacific, the Central Kansas Pacific, the Kansas Pacific, the Sioux City and Pacific, and the Western Pacific Companies were parties adverse to the United States, known as the "Five per cent." cases, in which the government gained the points, one relating to the date of completion of these railroads, and the other as to what should compose the net earnings, five per cent. of the gross earnings were payable to the government; and



**Third. The suits of the Union Pacific vs. United States and Central Pacific vs. Albert Gallatin**, brought to test the constitutionality of the act of Congress approved May 7, 1878, known as the sinking-fund law, in which the claim of the government was sustained by the Court.

While the decision in the sinking-fund cases is, in its bearing upon the relations of the government to these railroad companies, present and prospective, of the highest importance, in its assertion of the fundamental principle of good government, which prevents the creature from usurping or defying the power of its creator—the sovereignty of the people or nation—its effect must be felt for centuries to come in the history of this country. As is well said by Judge Sanderson, the learned counsel of the Central Pacific Company, in an argument against the power of the legislature of California to regulate fares and freights on the Central Pacific Railroad, and affirming the proposition that “Congress has ‘established’ the Central Pacific Railroad as a national highway for postal, military, and commercial purposes”—“The seventeenth section provides that if said company shall fail to comply with the terms and conditions of the act, or to keep the road in repair and use for an unreasonable time, ‘Congress may pass any act to insure the speedy completion of said road and branches, or put the same in repair and use, and may direct the income of said railroad and telegraph line to be thereafter devoted to the use of the United States,’” &c.; and, further, “that if said roads are not completed ‘so as to form a continuous line from the Missouri River to the navigable waters of the Sacramento River by the 1st day of July, 1876, said roads, with all their rolling-stock, fixtures, &c., shall be forfeited to and taken possession of by the United States’—all being powers which the sovereign only can exercise. A still further and perhaps more conclusive demonstration of the alleged intent of Congress to exercise complete legislative power over the road, for all the purposes for which its construction was undertaken, is found in the eighteenth section, which deals with the question of fares and the power of Congress to *add to, alter, amend, or repeal the act*. It provides that when the net earnings of the road and telegraph shall have reached a certain per centum upon their cost, ‘Congress may reduce the rates of fare thereon if unreasonable in amount, and may fix and establish the same by law. And the better to accomplish the object of this act, namely, to promote the public interest and welfare by the construction of said road and telegraph line, and keeping the same in working order, and to secure to the government at all times (but particularly in time of war) the use and benefits of the same for postal, military, and other purposes, Congress may at any time, having due regard for the rights of said companies named herein, *add to, alter, amend, or repeal this act.*’”

Finally, by the last section, the company is required to make annual reports as to certain matters therein mentioned to the Secretary of the Treasury, for the obvious purpose of enabling the general government to supervise and control the road and telegraph by legislation and otherwise (12 U. S. Stat. at Large, 489).

This provision in relation to fares has a controlling effect upon the question in hand. The right to regulate tolls is incident to sovereignty. Where the latter does not exist, the former does not. Nor can the doctrine of concurrent jurisdiction upon the subject of fares and freight be maintained if advanced. The clause that Congress may regulate them after the profits of the road shall have reached a certain percentage upon the cost, upon familiar principles is a denial of the right to interfere before that time on the part of either the general or State government; and the clause in relation to uniformity is a denial of any right on the part of State governments to interfere at any time; for if a right to interfere be admitted, the right to adopt any rate they might severally elect is implied. They might, therefore, adopt rates not uniform, and such a result, being in conflict with the declared purpose of Congress, shows that Congress has so far legislated upon the subject as to render repugnant all State legislation. Besides, whenever, from any cause, uniformity of rule is demanded, the right to deal

with the subject at all, is vested *exclusively* in the general government. nature of the subject, as well as the express will of Congress, all State interposition is prohibited.

Again:

The forfeitures provided for in the act, the right in a certain event to tax the corporation and devote the entire income to the use of the United States, and the right to fix and establish the rates of fare and make them *uniform* throughout the States and Territories, are acts of exclusive *sovereignty*, which as clearly indicate the purpose to withdraw the subject matter from State jurisdiction as a direct purpose to that effect would have done. The powers assumed are strictly sovereign in character, and their exercise by the Federal Government is incompatible with the exercise by the States, *for sovereign power over the same subject matter cannot be exercised by two bodies at the same time.*

Again, referring to the act of the State of California, passed in 1864, he says:

The object of this statute, as declared both in the title and the purview of the act, was "to enable the said company more fully and completely to carry out and perform the provisions and *conditions* of the said act of Congress." To the company, among other things, was vested with the power of eminent domain. Now, as a local or State corporation, the company already possesses all the powers under the general railroad laws of the State, and this further grant is inconceivable on every rational hypothesis except that the legislature realized and fully understood that the act of Congress had vested, or, which amounts to the same thing, had re-vested the company with the character and powers of a national corporation, and in that character it was to act in the future, and might in that character exercise the need of the power in question. The repeal of all laws and parts of laws which the provisions of the act is consistent with this theory and inconceivable on any other, for the laws referred to must be the laws under which the company was incorporated in the first instance. *Their repeal was a virtual dissolution of the company as a State corporation.*

And again:

Who, then, is the sovereign in this case—the general government or the State? If, as I have attempted to show in the first part of this argument, the corporation, which the road and telegraph have been constructed are the creatures of the general government, and have derived from that government all their rights and powers, and, further, if the road and telegraph have been built for the use of that government "for postal, military, and other purposes"; and, further, if the general government has asserted for itself the power to regulate freights and fares, and in the event of the corporations, or either of them, shall fail to observe and perform the conditions which their franchises have been conferred, the general government may dissolve the corporation of their roads and direct all their incomes to be devoted to the use of the United States; and, further, if this corporation may, by consolidation with other corporations named in the acts of Congress, merge its existence with that of the United States into one gigantic whole; and, further, if this State, under whose law this corporation was first organized, has formally assented to all this, and has repealed all laws as far as they conflict with such assent, this question as to who is the sovereign is already answered. *This corporation and its road and telegraph exist "by authority of the general government."*

Suppose this corporation had already failed to perform the conditions of the act of Congress, and the Secretary had already taken possession of this road and telegraph, who would be sovereign then, the general government or this State? To take possession implies sovereignty no less than possession with such conditions. If the general government was now in possession, operating the road by its engineers employed and paid by it, was now devoting its income to the use of the United States, is there any one so hardy as to assert that the general government would have to obey the laws of this State in operating the road, or that the paramount would have to yield to the subordinate?

Again, suppose the legislature of this State should repeal the law under which this corporation was first formed, which it has the power to do, would the State be found so hardy as to contend that this company would cease to exist; that the act of Congress under which the company have constructed their road would be repealed; that the ends sought to be accomplished by Congress by the construction of the road would all be defeated; that the company would not continue to exist and enjoy all its present rights and franchises under and by virtue of the act of Congress? Obviously not; and if not, there can be found no one so hardy as to contend for the State the sovereign control of this corporation and its road and telegraph.



Again, suppose the legislature of this State should conceive the idea that a wider or narrower gauge than that which has been prescribed by Congress for this road would better promote safety or subserve the interests of the public, and should undertake by law to establish such gauge, would any one contend, in view of the principles which have been considered in the course of this argument, that this corporation would be bound to adopt the new gauge? Such an act on the part of the corporation would defeat the object of Congress in requiring a uniform gauge from the Pacific to the Atlantic, viz, to cheapen and facilitate the transportation of commodities from ocean to ocean without breaking bulk. Such a law would be, in the language of Justice Story, in direct conflict with a law of Congress upon the same subject, and therefore inoperative. This result, like the previous examples, shows where the sovereign control over this road is lodged.

The decision in the "interest case" entitles these companies to one-half of all compensation for services rendered to the government, the court having decided that the interest, although paid semi-annually by the government, is not due or payable by the companies until the maturity of the principal of the subsidy bonds.

The decision in the "terminus case" requires the Union Pacific Railroad Company to operate their bridge over the Missouri River as a part of their continuous line of railroad from their eastern terminus on the Iowa bank of that river.

The decisions in the several "5 per cent." cases consolidated into one decision, which is necessary to a proper understanding of the particular points covered, may be briefly stated as follows:

1. Each railroad is to be considered completed for the purpose required in section 6 of the act of July 1, 1862, when the subsidy bonds due on the last section of the railroad accepted by the President were delivered to the company, any special retention of bonds by the government not affecting the regular delivery.

2. The net earnings are to be ascertained annually from the date of completion by deducting from the ordinary gross earnings of the subsidized railroad all expenses of the same incurred and actually paid during that year.

3. Discount and interest on floating debt, expenses, and taxes of lands and lots, interest on funded debt, premium on gold to pay coupons, requirements for sinking funds, interest on subsidy bonds repaid by transportation or otherwise, and depreciation of road or equipment, are not to be included in the "expenses" allowed.

4. Expenditures for betterments, new construction, or new equipment on the subsidized railroad are to be included in "expenses," the lien of the United States being improved thereby.

5. The 5 per cent. of net earnings is to be ascertained before deducting the amount paid as interest on first-mortgage bonds, but should the amount of net earnings in any year be insufficient to pay that interest, the company will not be required to pay the 5 per cent. of net earnings to the United States.

6. Each year's settlement is required to be independent of every other year's.

7. If the accounts of subsidized railroad have not been kept separate from those of unsubsidized railroad, as in the cases of the Kansas Pacific, Central Pacific, Central Branch Union Pacific, and the Sioux City and Pacific Companies, and it is impossible to ascertain the exact net earnings of the subsidized railroad, the earnings and expenses are to be prorated according to the whole mileage operated.

In carrying the principles announced in the decision into practical effect, many difficulties have been encountered. For instance, as to the fourth point above named, owing to insufficient detail in the entries on the books of the companies, it has been found impossible to locate with

any satisfaction the betterments or new construction, for which itures have been made; and, unless located on the subsidized thelien of the United States is in no way improved or benefited as regards the mileage pro-rating of earnings and expenses, where no separate account of subsidized railroad has been kept. method is found to work so inequitably toward the United States virtually dispose of all its claim to 5 per cent. in some cases others to reduce them to a very small amount. As an example earnings and expenses of the subsidized and unsubsidized rail Kansas City to Denver (Kansas Pacific) for the year 1878 are be as follows:

Items.	Miles subsidized. 294.
Gross earnings.....	\$2,872,277 98
Expenses.....	1,432,225 63
Net earnings .....	\$1,440,052 35
Net earnings per mile.....	\$3,554 95

If the subsidized and unsubsidized road in the past ten years the same proportion of net earnings as that shown above—and no reason why it should not have been so—and an actual mileage rate of the whole road operated be only allowed to the subsidized it is not seen how any settlement on such a basis can be made. equities of the case considered, it being no fault of the government separate accounts have not been kept. The result of such an apportionment of the whole net earnings for 1878 on that basis would be as follows:

	Total.	Subsidized.
Miles operated.....	638	294
Net earnings.....	\$1,440,585 31	\$389,546 95

The difference between five per cent. of \$1,440,052.35, or \$72,002.62, and the five per cent. of \$44,482.83, is \$27,520.29; which would be the amount lost to the government in that year.

To avoid these complications in the future, all of these roads have been required to keep the accounts of their subsidized entirely separate and distinct from those of all other railroads leased, or operated by them, and to furnish this office with statements of all joint tariffs and apportionment of earnings as arranged from time to time.

In the Denver Pacific case it was decided that as that company did not receive any bonds from the United States and did not owe to the government, it was not liable to have any of its earnings for services retained by, or to pay five per cent. of its net earnings to the United States.

Two important points, however, in regard to these subsidized roads appear to remain undetermined: First, as to the Kansas Pacific, whether the government is entitled or not to retain one-half of the compensation for services performed on the *land-grant portion* of its road by the company, unlike the Denver Pacific, being still indebted to the United States; and, second, as to the Sioux City and Pacific, whether the government is entitled to retain one-half of the compensation for services performed on a *leased line*—the Sioux City and Pacific Company performing the service, and being still indebted to the United States. Similar complications exist on the Central Pacific and on the Branch Union Pacific Railroads.

## COURT OF CLAIMS.

Two important cases are now on the calendar of the Court of Claims—those of the *Atchison, Topeka, and Santa Fé Railroad Company v. The United States* and the *Union Pacific Railroad Company v. The United States*; the former relating to the question of the amount of deduction the government is entitled to for the use of a railroad free of toll or other charge, and the latter as to the question of the right of the United States to fix the rate of compensation for carrying the mails on the Pacific Railroad.

When these questions are finally determined, and the doubtful points before alluded to are settled, it is probable that all contests with the railroads—land-grant and subsidized—will be terminated, and business relations resumed in an ordinary business way, which should secure to the government service by the railroads at the lowest rates and to the railroad companies prompt settlement and payment for the same.

## THE GRANTS RECEIVED BY THE RAILROAD COMPANIES.

Since September 20, 1850, the date of the approval of the act of Congress (9 U. S. Statutes, 466) making a grant of land to the States of Illinois, Mississippi, and Alabama, in aid of the construction of a railroad from Chicago to Mobile, and by which nearly four million acres of land were disposed of, down to and including March 3, 1871, the date of approval of the last land-grant act, it is estimated that over 200,000,000 acres of the public lands have been withdrawn from entry, and subjected to the claim of States and corporations for railroad purposes. Of this quantity about 44,000,000 acres have been certified or patented under the grants, and more than 31,000,000 acres of this quantity have been for railroads in whole or in part west, north, or south of the Missouri River.

A detailed statement of the quantity certified to each of these companies is given in Appendix E.

The money value of these 31,000,000 acres of land, at the average price heretofore obtained for the portion disposed of by the companies, is not far from \$140,000,000, the actual sales made by the companies being over \$60,000,000, and not one-half of the 31,000,000 acres sold. Of these lands over 6,000,000 acres have been certified to the Pacific Railroads and branches, of which about 5,000,000 acres have been disposed of by them.

In regard to the conditions imposed upon all of these railroads as to government transportation, a full classification of the companies, according to the character of the condition, is made part of the appendix above named. A careful reading of the several acts which made these grants to the States, from the very first to the last, shows that there are certain other quite important conditions which also attach to them—the principal ones being “that the lands hereby granted shall be applied in the construction of said road and branches respectively, in quantities corresponding with the grant for each, and shall be disposed of only as the work progresses, and *shall be applied to no other purpose whatsoever*”; and “that the United States mail shall at all times be transported on the said railroad under the direction of the Post-Office Department, at such price as the Congress may by law direct.” It is questionable, therefore, whether the proceeds of the lands granted to aid in the construction of any of these railroads—the Pacific Railroads included—can be used for any other purpose.

The amount of United States bonds issued to the Pacific Railroads is \$64,023,512, the miles of railroad so subsidized is 2,495.525, and the average of this money subsidy is \$25,900.66 $\frac{2}{3}$  per mile.



The miles of railroad subsidized by land grant under the Pacific Railroad acts—the Pacific Railroad and branches—are 3,035.85, the acres of land already patented to the companies being 6,517,075.04, the money value of which, at \$5 per acre, is \$32,585,375.20, or \$10.72 per mile.

#### CONDITION OF THE BOND AND INTEREST ACCOUNT

From the statement of the public debt of the United States, as furnished by the Treasury Department on June 30, 1879, the bond and interest account of the Pacific Railroad Companies is as follows, viz:

Name of railway	Principal outstanding	Interest accrued and not yet paid	Interest paid by the United States	Interest repaid by transportation of mails, &c.
Central Pacific.....	\$25,885,120 00	\$776,553 60	\$16,463,572 87	\$2,771,419 23
Kansas Pacific.....	6,303,000 00	189,000 00	4,427,523 09	12,324,910 55
Union Pacific.....	27,236,512 00	817,095 36	17,603,992 17	7,325,466 49
Central Branch				
Union Pacific.....	1,600,000 00	48,000 00	1,117,808 26	73,142 73
Western Pacific.....	1,970,560 00	59,116 80	1,136,197 74	9,367 00
Sioux City and Pacific.....	1,628,320 00	48,849 60	1,024,651 09	91,747 39
Totals.....	64,623,512 00	1,938,705 36	41,773,745 22	12,596,053 39

This statement only credits the companies with such services as the compensation for which has been covered into the Treasury. It omits the amounts which have been covered into the sinking fund of the Union and Central Pacific.

Appendix F of this report gives in detail the condition of the bond and interest account, including the sinking fund, from which it appears that

The principal of the bonds issued to the Pacific Railroad Companies is.. \$  
Interest at six per cent. to June 30, 1879.....

Total, principal and interest..... \$1

that the total amount of compensation for services rendered by the Pacific Railroad Companies covered into the Treasury is \$12,915,591.27, of which \$10,000,000 is applicable to—

Payment of bonds and interest.....  
Payment of five per cent. of net earnings.....  
Payment into sinking fund .....

that the interest on bonds belonging to the sinking fund was \$1,000,000  
that the total balance against the railroad companies was \$95,000,000

#### CONDITION OF THE TRANSPORTATION ACCOUNTS

Appendix G of this report gives in detail, for the respective Pacific Railroad companies, the amount of transportation rendered by their books, to December 31, 1878, the amount which the United States is authorized to retain, and the amounts payable in cash to the companies when settlements are consummated in accordance with the decisions of the Supreme Court.



The totals of the several items are as follows, viz:

Transportation rendered as per companies' books .....	\$18,853,131 02
Transportation rendered on <i>unsubsidized</i> road .....	1,120,857 07
Transportation rendered on subsidized road .....	\$17,732,273 95
One-half paid for in cash prior to act of 1873.....	\$4,287,960 01
One-half retained by United States prior to act of 1873. ....	4,193,104 87
Amount settled for prior to act of 1873 .....	8,481,064 88
Remainder applicable to the "repayment of interest," "5 per cent. of net earnings," "sinking-fund," and to the companies .....	\$9,251,209 07
One-half, applicable to "repayment of interest" paid by the United States .....	\$4,625,604 54
One-half, applicable to the payment of "5 per cent. of net earnings" .....	3,753,128 86
To the payment of "sinking-fund" requirement .....	452,976 47
And payable to companies .....	419,499 20

Of the transportation on unsubsidized road, \$1,120,857.07, there is applicable to payment of 5 per cent. of net earnings, equivalent to a cash payment by the companies, \$438,716.43, and payable to the companies, \$682,140.64.

#### CONDITION OF THE "FIVE PER CENT." ACCOUNTS.

As exhibited in Appendix G, there is due, to December 31, 1878, from the Pacific railroads, on account of 5 per cent. of their net earnings, the sum of \$4,716,265.23, which includes an estimated sum as to the Kansas Pacific, giving no amount for either the Sioux City and Pacific or the Central Branch Union Pacific, no determination having been reached as to these companies, the accounts being complicated with those of leased roads, unsubsidized roads owned, construction and equipment, and other matters. Of the sum named, transportation withheld from the Union and Kansas Pacific Companies will more than offset the \$2,737,576.85 payable by them; but of the amount payable by the Central Pacific, \$1,978,688.38, transportation withheld is insufficient by the sum of \$648,271.96, payment of which amount in cash has been required of the company. Detailed statements of the 5 per cent. account of the Union Pacific and Central Pacific Railroad Companies are given in Appendix H of the report.

From these statements it will be seen that, as to the Union Pacific, from November 6, 1869, to November 5, 1875—

The amount claimed by the United States in original bill to be due was (to October 31, 1874, only) .....	\$1,040,056 29
The amount claimed by the company to be due was .....	178,790 26
The amount claimed by the United States to be due was .....	1,640,442 52
The amount found by the auditor of the court to be due was .....	1,404,859 41
The amount found by the Court of Claims to be due was .....	1,402,602 28
The amount found by the Hon. Justice Davis to be due was .....	1,301,507 55
The amount found by the Supreme Court to be due was .....	1,208,337 34

In addition to the amount due to November 5, 1875, \$1,208,337.34,

The statements show that the amount due on the same account from November 6, 1875, to June 30, 1878, is .....	\$942,455 87
And from July 1 to December 31, 1878 .....	186,783 64

Total from November 6, 1869, to December 31, 1878. .... \$2,337,576 85

From the statements given in the same appendix, it will be seen that the Central Pacific Railroad Company—

Amount claimed by the United States in original bill on account of five per cent. of net earnings from July 16, 1869, to October 31, 1874. .... \$1,029,547.08  
 Company made no showing.

Under the decision of the Supreme Court the company's statement makes amount due from November 6, 1869, to December 31, 1878, on account of "five per cent." ..... 1,029,547.08

Amount found due by this office for the same period, and accepted by the company ..... 1,029,547.08

The result of the "five per cent." suit against the Union Pacific was that the United States obtained judgment for \$1,029,547.08 and the company set forth that it owed, and within \$150,000 of the amount originally sued for.

The result of the examination of the accounts of the Central Pacific undertaken by this office immediately after the decision in the "sinking-fund case" was announced, was that the amount due by the company in accordance with the principles of the decisions in the "sinking-fund cases" from November 6, 1869, to December 31, 1878, was \$745,391.86 more than the company's own statement set forth.

So that, in these two cases alone, the government has received two million dollars more than the amount the companies had and would have to pay.

#### CONDITION OF THE SINKING-FUND ACCOUNT.

From July 1, 1878, to June 30, 1879, as shown in Appendix I, there was covered in to the sinking-fund established in the Treasury of the United States by Act of Congress approved May 7, 1878, the following sums, viz:

	Union Pacific.	Central Pacific.
One-half of transportation performed since July 1, 1878. ....	\$200,809 86	\$126,136 13
Interest on bonds belonging to the sinking-fund. ....	743 75	458 75
Totals. ....	201,553 61	126,594 88

By examination of the companies' books and accounts for the months ending December 31, 1878, the requirements for the sinking-fund for that period are as follows, viz:

	Union Pacific.	Central Pacific.
One-half of transportation on subsidized road, government passengers. ....	\$64,656 65	\$55,918 66
Government freight. ....	80,307 79	
* United States mail. ....	149,193 75	67,923 36
Total one-half of transportation. ....	294,158 19	123,842 02
Additional cash payment required to make the "whole transportation," the "5 per cent. of net earnings," and "additional cash payment" together amount to 25 per cent. of net earnings. ....	153,818 37	181,329 51
Total amount for sinking-fund. ....	452,976 47	305,171 53
Sinking-fund deficient on June 30, 1879†. ....	251,422 86	178,586 65

\* The Union Pacific Company's charge for the whole service is \$100,955.20, of amount allowed by the Post-Office Department, or \$54,977.61 for the one-half. Since the date of this report, namely, on November 10, 1879, the Central Pacific Railroad Company deposited in the Treasury \$181,329.51 on account of "sinking-fund" and \$39,191.27 on account of "five per cent. of net earnings" for the six months ending December 31, 1878.

It will be observed that although six months had elapsed from date of performance of service by the companies, the accounts for transportation other than mail had not been settled and the amounts covered in to the sinking-fund; and that but for the settlement and covering of amounts due for mail service since December 31, 1878, the deficiency of the sinking-fund would have been much larger.

As it is important that the sinking-fund be credited promptly with all moneys it is entitled to, these accounts for transportation should certainly receive the earliest attention on the part of administrative and accounting officers, otherwise the companies will have just cause of complaint. To show how the matter stands for the six months ending December 31, 1878, the Union Pacific Company's books have the United States charged with the following service, omitting for the sake of explanation the \$54,977.61 extra charge for mail service:

	Mail.	All other.	Total.
July 1 to December 31, 1878.....	\$94,216 14	\$144,964 35	\$239,180 49
Covered in to June 30, 1879.....	141,291 71	59,518 15	200,809 86
Composed of the following service:			
1878.....	94,216 14	53,798 49	148,014 63
1879.....	47,075 57	5,719 66	52,795 23
Showing that there remained of service performed in the six months ending December 31, 1878, of the Army transportation and miscellaneous accounts to be settled and passed to the credit of the sinking fund.....		91,165 86	91,165 86

It is fitting to state here that the sinking-fund act requires these credits and the money deposit by the company to be made on February 1st in each year. The present practice of the departments will render this utterly impossible, as many of the miscellaneous accounts do not reach the accounting officers by that time. In the recommendations for additional legislation it is submitted that this date be changed to April 1st, by which date also the accounts of the respective companies can be examined, and the amount of cash deposit required be determined.

#### CONDITION OF THE PROPERTY OF THE PACIFIC AND OTHER RAILROADS.

Immediately after the decision of the Supreme Court of the United States was announced in the "sinking-fund" cases, on May 5 last, steps were taken to examine the books and accounts of the Central Pacific Railroad Company, at their office in San Francisco, Cal.

In proceeding to San Francisco, on May 20th to 24th, the Union Pacific Railroad, the Omaha and Republican Valley Railroad as far as Osceola, the Utah Central Railroad, and the Utah Southern Railroad as far as Nephi, were passed over in company with the officers and directors of those roads. The more important stations and shops, the company's rolling-mill at Laramie, and their coal mines at Rock Springs and Almy were visited.

The Central Pacific Railroad from Ogden to San Francisco was passed over in the regular train *via* the Sacramento, Tracy, and Martinez route. At intervals, the Napa Branch of the California Pacific and the Southern Pacific (Northern division) as far as San José were traveled over in regular trains, as well as the Western Pacific from San José *via* Niles to



Oakland. On June 17th to 21st, in company with the general tendent, the Central Pacific to Goshen, the Southern Pacific the Southern Pacific of Arizona to Casa Grande, and the Los and San Diego and Los Angeles and Independence Railroads were eld over, stopping at all principal stations, some minor ones, shops. The subsidized portion of the Western Pacific between and Niles was also passed over at that time.

The Oregon and California, the Oregon Central, and the Pacific in Washington Territory, were passed over in the company officers of those roads in the early part of July, excepting the from Kalama to Tacoma, which was traveled over in the regular

In returning from California the shops of the Central Pacific company at Sacramento, and their well arranged and admirably conducted institution—the railroad hospital—were visited.

In the legislative, executive, and judicial appropriation act, June 21, 1879, the Congress made an appropriation for a "railroad engineer" in this bureau, in order that the properties of the railroad companies might be examined and reported on. Mr. A. B. Nichols, Philadelphia, Pa., was appointed to the position on August 18, 1879, and once prepared to examine the subsidized Pacific Railroads and other land-grant roads as time or opportunity might permit.

His report of the condition of the Union Pacific, Central Pacific, Kansas Pacific, Denver Pacific, Central Branch Union Pacific, the Santa Fe and Pacific, Southern Pacific—northern division, Burlington and Missouri River in Nebraska, Chicago, Burlington, and Quincy—Indiana, Saint Joseph and Western, and the Hannibal and Saint Louis Railroads is made part of this report and immediately precedes the appendixes.

The government having no inspection-car, and it being desirable only for convenience but for the sake of comparison to pass over various roads in the same car, and also, if possible, to pass over the Eastern and Western railroads which are considered "first-class roads," application was made to the president of the Union Pacific for the loan of a car suitable for the purpose, which was immediately, and generously responded to.

By permission of John M. Toucey, esq., general superintendent of the southern division of the New York Central and Hudson River Railroad, the inspection-car was attached to the regular train on that road to give an opportunity to see the line by daylight, leaving New York August 28th, at 10 a. m.

From the New York Central the route was over the Lake Shore and Michigan Southern to Toledo, thence by the Wabash to Hannibal. The Hannibal and Saint Joseph main line was examined by day, and in some detail; and owing to the great decrease in the income and profits of this road for some years past, it was with some interest that the road and equipment were found in as good condition as they now are.

From Saint Joseph to Atchison over the Hannibal and Saint Joseph three days were given to an examination of the Central Branch Union Pacific and its extensions; six days to the Kansas Pacific; one day to the Denver Pacific; three days to the Colorado Central division of the Union Pacific; five days to the Union Pacific west of Cheyenne; two days to the Central, Western, and Southern Pacific—northern division; two days to Central Pacific in and around San Francisco, and Niles; three days to Central Pacific, Benicia route, and Colusa; and four days to Union Pacific, between Cheyenne and Omaha.

day each to the Burlington and Missouri River and Saint Joseph and Western; one day to the Sioux City and Pacific; two days to the Chicago, Burlington and Quincy; returning east over the Pittsburgh, Fort Wayne and Chicago, and the Pennsylvania by daylight through the kind permission of Col. Thomas A. Scott, president of those companies.

In nearly all these examinations the engineer, bridge superintendent, road-master, division superintendent, manager or some other officer or officers of the roads participated, and were found to be courteous and obliging in every respect.

The laws relating to all of these railroads, the standard determined on by the Board on Construction of Pacific Railroad in 1866, and the revised standard adopted by the honorable the Secretary of the Interior in his circular of instructions for the examination of railroads, dated April 28, 1871, all seem to require that the railroads built by government aid shall be in all respects "first class."

What, then, is a first-class railroad?

Without going into the detail of construction and equipment of a railroad or of the system and methods adopted for the transaction of its business as a common carrier, that railroad only can be considered "first class" which gives to the public safe, prompt, comfortable, convenient, reliable, and speedy service; and, to do this, the location, road-bed, track, bridges, tunnels, culverts, crossings, switches, signals, locomotives, cars, brakes, couplings, lights, stations, eating-houses, officers, employes, and attendants must be of such character as to enable this kind of service to be given. It is believed that the real and permanent interest of every railroad company will be best promoted when it serves the public best; and it can only serve the public in the best manner by using the best materials, adopting the best methods, and employing the best service.

The record of recent railroad accidents exhibits in one case a span of a large and costly bridge carried down bodily, not broken, by a stock train, or strained in some way from its bearings, the conclusion upon which must be that the bridge was either imperfectly built by being insufficiently secured, or perhaps carelessly examined, or unprovided with proper floor or guard-rail; in another case an important tunnel catches fire and interferes with traffic to such an extent that a temporary track has to be laid on another line—the fault of timber lining or a careless watchman; in another case, a yard-master insists on making up a freight train by transferring cars across the main track when an express train past due is known to be coming, in which case it is difficult to say which is the most to blame, the yard-master for his stupidity, or the system of management which permits lost time to be made up at any speed, or which does not change its schedule when it is found time cannot be promptly made; and a quite new bridge in yet another case goes down with six freight cars in an unaccountable manner, showing that either material or workmanship was not "first class."

These occurrences, day after day, suggest another question, whether we have any actually "first-class" railroads.

The nearest approach, probably, to a first-class railroad at the present time is to be found on the main line of the Pennsylvania Railroad—so near, in fact, that it may be called the modern standard. Without question that company is certainly trying to obtain the best material, the best methods, and the best service.

Another and important question now suggests itself, whether the main trunk line and branches of the Pacific Railroad, traversing nearly one thousand miles of desert country, sparsely inhabited, with little or

no local business, will ever need to be brought up to the condition of such a road as the Pennsylvania?

That it will be in the distant future, when traffic and population warrant it, there can be no question; but to-day, when the tonnage of the Union and Central Pacific together is but 2,632,000 and the tonnage of the Pennsylvania and Central Pacific together is but 758,295,000, and that of the Pennsylvania, operating one-third the number of miles of railroad, is 10,947,000 tons and 1,732,000 ton-mileage, equal to *seven and one-half times* the tonnage and *twice* the ton-mileage, it can hardly be expected. The fact is, the condition of the Pennsylvania and other Eastern roads is the result of absolute necessity; the force of circumstances has compelled it, for it would be impossible to do the business under the old system and over the old road. For the amount of business done over the Pacific Railroad can be no doubt that they (the Central and Union Pacific) are in a better condition than when they were accepted by the government, in a better condition than many railroads east of the Missouri River, carrying a larger tonnage, and that they have been extraordinarily exempted from accidents of every kind.

The improvement of business on the Western roads generally, and the marked improvement in road-bed, track, bridges, and equipment of the Pacific trunk line and branches are not behind in this movement. It is confidently expected that the managers of all the roads that have been visited will remedy the defects which the engineer has noted, and will continue to improve their roads as the necessity of business may require, from time to time, so that the properties shall in no wise be allowed to deteriorate.

#### CONDITION OF BUSINESS ON THE RAILROADS.

While the general business of the Pacific Railroads and the Union Pacific Railroads, which are required to report to this office, as well as all other Western railroads, is improving in a greater or less degree according to location or management, it is noted that the "local business" on all the roads, including the Pacific, has largely increased, and that "through freight business" has not increased as it might have been expected to do, and that "through passenger business" has rather decreased than otherwise, both in mileage and earnings.

The following tabular statement shows the condition and progress of the business of the Union Pacific, Central Pacific, and Kansas Pacific Railroads from 1872 to 1878 and for a portion of 1879:

Items.	1872.	1873.	1874.	1875.	1876.	1877.	1878.	1879.
UNION PACIFIC.								
Miles operated.....	1,038	1,038	1,038	1,038	1,038	1,038	1,038	1,038
Passenger earnings.....	\$3,370	\$3,887	\$3,952	\$4,346	\$4,307	\$3,600	\$3,600	\$3,600
Passenger mileage.....	80,663	95,709	105,100	132,500	128,030	107,829	107,829	107,829
Freight earnings.....	\$4,337	\$5,026	\$5,136	\$5,993	\$6,594	\$6,821	\$6,821	\$6,821
Freight mileage.....	178,140	223,380	262,200	269,400	292,000	334,600	334,600	334,600
Gross earnings.....	\$9,109	\$10,650	\$10,962	\$12,460	\$13,370	\$12,948	\$12,948	\$12,948
CENTRAL PACIFIC.								
Miles operated.....	1,176	1,254	1,266	1,340	1,424	1,906	1,906	1,906
Passenger earnings.....	\$4,065	\$4,418	\$4,723	\$5,509	\$5,589	\$5,483	\$5,483	\$5,483
Passenger mileage.....	100,120	120,860	134,320	168,330	172,640	181,710	181,710	181,710
Freight earnings.....	\$6,967	\$7,492	\$7,887	\$9,056	\$10,027	\$9,738	\$9,738	\$9,738
Freight mileage.....	190,510	205,040	242,150	272,180	310,530	309,730	309,730	309,730
Gross earnings.....	\$11,003	\$12,863	\$13,720	\$15,665	\$16,094	\$16,471	\$16,471	\$16,471



Items.	1872.	1873.	1874.	1875.	1876.	1877.	1878.	1879.
<b>KANSAS PACIFIC.</b>								
								6 mos.
Miles operated.....	673	673	673	673	673	673	673	673
Passenger earnings.....	\$1,172	\$1,242	\$1,111	\$933	\$768	\$690	\$783	\$535
Passenger mileage.....	20,664	23,500	22,020	19,200	18,230	18,940	22,173	.....
Freight earnings.....	\$2,204	\$2,077	\$1,905	\$2,157	\$1,968	\$2,215	\$2,405	\$1,261
Freight mileage.....	72,369	61,980	62,470	72,120	71,540	85,800	140,013	.....
								8 mos.
Gross earnings.....	\$3,723	\$3,563	\$3,356	\$3,363	\$3,000	\$3,284	\$3,610	\$2,750

The improvement of business on the Kansas Pacific since 1876 has been about 10 per cent. annually, or for 1879 over 1876 about forty (40) per cent. This has chiefly been caused by the great local business which has sprung up in Kansas during the last two years. Many of the other roads in that State and in Nebraska have had a similar experience, notably the Central Branch Union Pacific, the Atchison, Topeka and Santa Fé, and the Burlington and Missouri River Railroad in Nebraska. The gross earnings of these railroads for the years 1876, 1877, 1878, and 1879 have been as follows:

*Central Branch Union Pacific.*

	1876.	1877.	1878.	1879.
Miles operated.....	100	120	172	Estimated 220
Gross earnings.....	\$172,832 68	\$230,436 54	\$624,953 77	\$1,100,000 00

*Atchison, Topeka and Santa Fé.*

	1876.	1877.	1878.	1879.
Miles operated.....	697	738½	807½	Estimated 860
Gross earnings.....	\$2,486,582 66	\$2,679,106 51	\$3,950,868 09	\$6,400,000 00

*Burlington and Missouri River Railroad in Nebraska.*

	1876.	1877.	1878.	1879.
Miles operated, estimated.....	240	375	400	450
Gross earnings.....	Estimated \$900,000	\$1,306,436	\$1,921,350	\$2,400,000

These examples forcibly illustrate the extraordinary character of the movement of population and business west of the Missouri River.

Appendix K of this report gives a condensed statement of the business of most of the railroads in the United States for the years 1877 and 1878, from which the following deductions are made, viz:

Items.	Year ending Dec. 31, 1878.	Year ending Dec. 31, 1877.	Increase.	Decrease.
Length of lines.....	80,831	79,208	1,623	.....
Reported miles operated.....	78,650	74,111	3,539	.....
Total stock and debt.....	\$4,772,297,349	\$4,806,202,022	.....	\$33,904,673
Total stock and debt per mile.....	60,677	64,851	.....	.....
Gross earnings.....	\$490,103,351 00	\$472,909,272 00	\$17,194,079	.....
Working expenses.....	302,528,184 00	301,932,575 00	595,609	.....
Net earnings.....	187,575,167 00	170,976,697 00	16,598,470	.....

Showing that while gross earnings for 1878 increased but a and five-eighths ( $3\frac{5}{8}$ ) per cent. over those of 1877, the increase in earnings was nearly nine and three-quarters ( $9\frac{3}{4}$ ) per cent.

#### THE UNION PACIFIC RAILROAD COMPANY.

This company has rendered and continues to render such have been called for from time to time.

This company operates  $1,033\frac{41}{100}$  miles of single-track railroad, being the distance from the east line of the company's property at Council Bluffs, Iowa, to Ogden, Utah Territory, the 5 miles from the junction with the Central Pacific being leased to and operated by that company;  $1,038\frac{6}{100}$  miles of the road are subsidized.

As to the condition of the property the engineer's report, herewith, shows that there remain many places where the line of the road, or both, may yet be improved; that over 50 per cent. of the road-bed west of North Platte should be widened; that at Sidney a good many ties need renewing; that in view of increasing traffic and the use of heavier rolling-stock, steel rail used for the road should be heavier than 56 pounds or 58 pounds to the yard; that at Cheyenne and Valley a large quantity of iron needs *immediate* renewal; that although the surface and line of the road, as a rule, is good, there are a number of curves and some tangents which should be improved with an instrument; that the switches and curves leading into the road can be much improved; that the road is not provided with "elevator-boards" or "mile-posts"; that timber guards are not laid on the bridge floors, and that the policing of the road is not of the best. The depot buildings, machine-shops, water-tanks, engine-houses, and rolling-stock are in good repair generally, and are sufficient for the requirements of business.

The company is rapidly substituting steel rails for iron, and has laid some 460 miles of track so laid. The bridges on the whole road are being improved and strengthened. Water-tanks of larger capacity and of more durable material are being put up wherever new ones are required. New locomotives and cars have been added to the fleet from time to time, and all of it is now in good condition. A large quantity of material of every kind is kept on hand.

During the calendar year of 1878 the company expended for maintenance of way, bridges, and buildings, &c., \$1,654,795.82, or about 10 per cent. of the entire operating expenses including taxes, nearly all of this being on track, rails, and ties alone; there was also expended for additional construction, equipment, &c., \$271,738.48; the whole amount being \$1,926,534.30, or over \$1,850 per mile of road operated.

The company has neither track department, engineer department, nor a superintendent of track *per se*, but has a superintendent of construction. It can hardly be questioned whether in the expenditure of \$2,000,000 nearly annually for maintenance of way, &c., it would be economy for the company to employ a superintendent of track with one or more assistants. A great part of the benefit to be obtained from the use of steel rail must come from the manner in which it is laid, the uniformity of system and detail in track and road repairs must be maintained, both labor and material. It is almost impossible for a general superintendent to give to this part of the work as much personal attention as is really required without letting some of the work suffer; the superintendents must, therefore, rely on roadma-

whom some practical engineering superintendence is nearly always required.

The transfer grounds and the buildings of the company at Council Bluffs are ample for all business purposes, well arranged, in good order, and creditable to their enterprise. The hotel part of the building is excellently kept, neat, clean, and comfortable, but will probably need enlargement at an early day, as it is now often overrun with guests. The company proposes to put shelter-sheds on the different platforms where the eastern connecting lines run in their passenger trains. It behooves every railroad company to study the wants and necessities of the traveling public and furnish all conveniences liberally and promptly.

The grounds and buildings of this company at Ogden, in connection with those of the Central Pacific, Utah Central, and Utah and Northern, require attention and should be remodeled at once. The buildings are poor, and crowded together without definite plan or convenient arrangement, making the risk from fire quite serious, although the water-supply is considered ample. Of the accommodations for the public there are virtually none. The tracks are of mixed, unknown, or joint ownership, often leading to complications among the employes of the various roads. It is understood that plans have already been made or proposed for a union passenger depot at this point and for an improved arrangement of freight depots, yard, engine-houses, and shops. They cannot be adopted too soon. One fire might destroy rolling stock alone to an amount in excess of the whole cost of such an improvement.

The coal mines owned and worked by this company constitute one of its most valuable assets. The production of the mines at Carbon, Almy, and Rock Springs for the last four years has been as follows:

1875, 208,222 tons, costing at an average \$1.88 per ton.  
 1876, 264,771 tons, costing at an average \$1.41½ per ton.  
 1877, 275,480 tons, costing at an average \$1.13½ per ton.  
 1878, 275,795 tons, costing at an average \$1.04½ per ton.

The shipments of coal over the road, including that for the company's own use, have been as follows:

	Tons.		Tons.
1871.....	178,818	1875.....	315,489
1872.....	271,147	1876.....	274,428
1873.....	323,664	1877.....	263,712
1874.....	286,403	1878.....	254,426

The average cost of the coal used by the company, including freight, has been as follows: 1876, \$4.50 per ton; 1877, \$4.17 per ton; 1878, \$4.25 per ton.

The sales of coal by the company have been as follows:

1876, 65,042 tons, at an average price of \$6.51 per ton.  
 1877, 92,289 tons, at an average price of \$6.26 per ton.  
 1878, 102,240 tons, at an average price of \$6.13 per ton.

The mines being located on the western end of the road, the length of haul becomes an important consideration in the question of the best policy for the company to adopt so as to increase its coal business. The Rock Springs coal is the only one at all suitable for domestic use. The Evanston (Almy) coal is a good steaming coal. Rock Springs is 831 miles and Evanston is 957 miles from Omaha. The two great necessities of the country through which the railroad passes for hundreds of miles are good water and fuel. To get the country settled, *cheap* fuel is a prime necessity. Leaving entirely out of consideration the question of competition with other coals, it cannot but pay the company to supply all consumers west as well as east of these mines at the very lowest rate possible. The results could hardly be otherwise than that more



coal would have to be mined, more people would settle on the more business of a permanent character would be gained. The great prosperity of this railroad must be derived from the local and the development of the surrounding country. At one cent per mile for all freight hauled in 1878, the cost was \$3,660,000, or a thirds of the expense, while the average rate charged for freight including coal, was 1.96 cents per ton per mile. Coal is one of the cheapest classes of freight. At 2 cents per ton per mile, and of 50 cents per ton on the coal, the "Almy" coal could be sold at Lake City at \$4 per ton, and the "Rock Springs" at \$6.50. The price charged for the Rock Springs coal in Salt Lake is \$8. It will be to the company's best interest to examine into this thoroughly with a view to placing themselves on a good footing with the people as well as increasing their own profits.

The lands of the company, especially those west of Julesburg, are as valuable as they have often been estimated to be. Many more acres will only be available when some cheap, effective system of irrigation has been found. The company has quite recently disposed of a quantity of its desert lands at a merely nominal price in order to give an irrigating company the opportunity to put their plans to a test; should they be successful, much of the land will be greatly increased in value. To December 31, 1878, the company has sold 296,800 acres of land. During the last six months of 1878 there were 99,062½ acres, and amounted to \$447,654.53, and during the first six months ending June 30, 1879, about 150,000 acres were disposed of for \$491,477.88.

The total receipts from sales of lands and lots (including interest) to June 30, 1879, have been.....	\$8
The total expenses and taxes.....	1
Net proceeds .....	\$6
The land and town-lot notes and cash held by the company on June 30, 1879, amounted to.....	\$4
Land-grant bonds outstanding.....	6

Balance to be provided for from future sales..... \$2

The gross proceeds of sales of lands are, by the terms of the mortgage, required to be used for the redemption of bonds, all expenses having to be paid by the company out of other income.

A quite large item in the assets of the company is that consisting of stocks, bonds, and accounts of other companies. These assets represent moneys invested in branch railroads. These railroads are for the most part feeding lines, and give to the trunk line considerable increasing business. The names of these railroads, &c., and the amounts invested in them, are as follows:

The Colorado Central.....	\$4
The Utah and Northern.....	1
The Utah Southern.....	
Omaha and Republican Valley .....	
Utah Central.....	
Utah Western .....	
Hastings and Grand Island .....	
Summit County Railroad .....	
Occidental and Oriental Steamship Company .....	
Sundry other stocks and bonds.....	

Total .....	\$7
On June 30, 1878, these investments amounted to.....	5
Increase .....	\$2

These investments are probably necessary and advisable, in order to keep control of the lines as well as to develop the country for business. There is some risk, perhaps, in the company making such investments, especially by constructing new railroads to compete with those already built belonging to other companies. It is doubtful whether either of such competing lines can be profitable; to say the least, they cannot until the country has become more densely populated. This is particularly the case in such instances as the projected line to Sioux City, Iowa, and the Colorado Central from Cheyenne to Denver; in the former instance, the Sioux City and Pacific, a subsidized branch of the Union Pacific, having direct connection with the Union Pacific at Fremont, Nebraska, is seriously affected; in the latter instance, the Denver Pacific, from Denver to Cheyenne, another authorized branch of the Pacific Railroad, was virtually bankrupted, and has subsequently fallen into the control of this company. So far as the government interest in the Pacific Railroad and branches is concerned, that of an extraordinary creditor of all of them, it may be that some steps to protect that interest may be necessary to be taken, either by prohibiting such roads from being built, by requiring the companies to afford each other equal facilities and regular business connections and arrangements, or by regulating the rates of freight and fare thereon.

The Union Pacific Company does its own express business, and has made quite large profits therefrom, as is shown by the following statement:

Year.	Express earnings.
1870 .....	\$281,691 76
1871 .....	307,731 32
1872 .....	336,333 35
1873 .....	410,190 76
1874 .....	381,303 77
1875 .....	444,174 23
1876 .....	502,738 42
1877 .....	430,791 98
1878 .....	488,645 92
1879 to June 30 .....	179,093 86
<b>Total .....</b>	<b>\$3,762,695 37</b>

The special "expenses" and "damage to express goods" for the fiscal year ending June 30, 1878, were—

Expenses .....	\$65,362 90
Damages, including the loss by robbery of about \$40,000 .....	51,821 15
<b>Total .....</b>	<b>\$117,184 05</b>

The total expenses incurred in doing this business of \$3,762,695.37 have been estimated at  $12\frac{1}{2}$  per cent. for special expenses and  $7\frac{1}{2}$  per cent. for hauling, or about \$752,539.07 for the entire period, leaving net earnings \$3,010,156.30, on which the government 5 per cent. has been \$150,507.81. The earnings for the six months ending June 30, 1879, have been \$50,000 less than those for the same period in 1878. This is owing principally to the diversion of gold shipments under the new regulations by which Treasury gold has been carried in the mails, and of which the company complains that while it brings them much additional risk both to life and property, it brings them no additional pay.

The question of the profitability of this express business is now partially referred to here and at this length for the reason that the Central Pacific Company does not operate its own express, but entered into a

contract with Wells, Fargo & Co., years ago, from whom it has been during the same period as that above shown for the Union Pacific.

The sum of.....	\$
Deducting estimated expenses.....	\$

Leaves but .....	\$
as net earnings of the Central Pacific express business—5 per cent of which payable to the government is.....	\$

This shows that such a contract operates to the detriment of the railroad company and the government to such an extent that it is necessary to prevent by requisite legislation such farming of the railroad company's business. The government directors of the Union Pacific Railroad Company in 1870, or before, interfered to prevent a contract being made by that company with Wells, Fargo & Co. by an act of May 7, 1878, which requires 25 per cent. of net earnings to be paid to the United States, it makes a very much more important difference in dollars and cents than it could have done in the past. With this in mind has been made upon the president of Wells, Fargo & Co. a return showing the amount of the net earnings, &c., of that company since November 6, 1869, upon which it is claimed 5 per cent. is payable to the United States. If the express company is not allowed to pay this 5 per cent. of net earnings, or if the courts decide against a claim of the United States, the railroad company should be required by Congress to do its own express business.

The Union Pacific Railroad Company, in opposition to the policy of the government directors, as it is understood, on October 1, 1867, entered into a contract with Mr. George M. Pullman to run his sleeping-car business on their railroad. Another contract was subsequently made with the Pullman Pacific Car Company. This last contract expires September 1, 1882. There does not appear to be any reason why this company should not run its own parlor and sleeping cars as well as do its own express business. The peculiarity of the case is, that while *this company* runs its own express business, it farms out its sleeping-car business to the Pullman Pacific Car Company, while the *Central Pacific*, on the contrary, farms out its express business to the Wells, Fargo & Co. and runs its own sleeping cars. There appears to be no earnings from the sleeping-car business reported by this company, but the expenses of the company have been put from October 1, 1867, to June 30, 1882, at \$543,204.95. For a comparison of this showing with that of the Central Pacific reference is made to the discussion of the affairs of the Pullman Pacific Car Company in another part of this report. As in the express business of Wells, Fargo & Co., on the Central Pacific, a demand is made on the Pullman Pacific Car Company for a statement of net earnings on the Union Pacific Railroad since November 6, 1869, to ascertain the amount of "five per cent." of the same, which is claimed is due from the Pullman Pacific Car Company or from the Union Pacific Company to the United States.

The first class or express passenger train service and equipment of the Union Pacific are fully up to the requirements of the business. The speed of express or first-class trains, including stops, averages about 19 miles per hour; that of emigrant trains about 12 miles per hour. Great improvement is being made in the eating-houses on the road, which is being vital to the interests of the company to serve the traveling public in the best manner, the train accommodations, quality of rolling stock, cleanliness, speed, meal hours, and the quality of and prices of meals, and other matters, may safely be left to the good judgment of the general manager. It is, however, suggested that a fast mail and passenger train on this road—stopping only at major principal points, or at division termini, now that the Central



about to shorten the time on its line—would be well patronized; whether it would pay the company can only be determined by practical test. A gain of twenty-four hours in crossing the continent would be appreciated by all business men, both as regards mail and passenger transportation. The weight of mail carried is increasing to such an extent that ere long it may be necessary to run a through and local postal car. Every inducement that can be should be offered by the company toward increasing its passenger travel. The decrease of through passenger business involves many questions which should be carefully examined into. If a more liberal policy, lower rates, and quicker trains will build up a much larger passenger business it may pay the company to inaugurate a change, especially during the spring and summer months.

The receipts and expenditures of the company for the year ending June 30, 1879, have been as follows:

RECEIPTS.		
United States passengers.....	\$172, 114 76	
United States freight.....	308, 120 36	
United States mail.....	*596, 775 00	
		\$1, 077, 010 12
Commercial passengers.....	2, 956, 258 36	
Commercial freight.....	18, 069, 814 78	
Express.....	437, 712 52	
		11, 483, 785 66
Miscellaneous earnings.....		344, 061 30
Total earnings.....		\$12, 904, 857 08
Discount and interest.....	\$784, 322 96	
Interest on bonds held.....	449, 088 39	
Dividends on stocks held.....	517, 399 14	
Gains on investments.....	496, 419 96	
Miscellaneous.....	35, 187 81	
Total income receipts.....		2, 282, 418 26
Total receipts.....		\$15, 187, 275 34
EXPENDITURES.		
Conducting transportation.....	\$974, 070 74	
Maintenance of way.....	1, 494, 592 70	
Motive power.....	1, 858, 725 79	
Maintenance of cars.....	432, 533 58	
General expenses (taxes included).....	638, 372 82	
Total operating expenses.....		\$5, 398, 295 63
Discount and interest.....	87, 409 00	
Interest on funded debt.....	4, 234, 133 66	
Premium on gold.....	3, 779 74	
Loss on investments.....	248, 841 88	
Dividends paid.....	1, 653, 525 00	
Total income expenses and dividends.....		6, 227, 689 28
Total expenditures.....		\$11, 625, 984 91
Surplus receipts over expenditures.....		\$3, 561, 290 43
Applicable to payments under the act of May 7, 1878, 25% of net earnings after deducting \$1,633,860, in- terest on first-mortgage bonds, \$5, 872, 701.45 $\times$ 0.25=	\$1, 468, 175 36	
Interest on first-mortgage bonds due July 1, 1879.....	816, 930 00	
Dividend 14%, on \$36,762,300 stock, payable July 1, 1879	551, 175. 00	
		2, 836, 290 36
Net surplus for the year.....		\$75, 010 07

\* This is the company's charge. The Post Office Department allows but \$376,864.58.

† Including \$874,127.49 of "company freight."

The liabilities and assets of the company on June 30, 1879, were as follows:

LIABILITIES.		ASSETS.
United States bonds .....	\$27,236,512 00	Road and equipment .....
Interest on U. S. bonds .....	18,421,087 53	Cash .....
Other bonded debt .....	50,404,000 00	Company's bonds and stocks .....
Interest due and accrued .....	* 869,891 06	Other bonds and stocks .....
Bills payable .....	3,382,824 14	Bills receivable .....
Accounts payable .....	1,179,021 07	United States transportation with- held .....
Dividends payable .....	* 555,953 50	Accounts receivable .....
Capital stock .....	36,762,300 00	Operating department .....
	138,811,589 30	
Land sales .....	9,062,038 56	Land cash, and land notes .....
		Land expenses .....
		Balance, deficit or debit to in- come account .....
	\$147,873,627 86	

\* Including payments above stated to be made July 1, 1879.

The account of this company with the United States on June 30, 1879, is as follows:

Transportation performed for the United States, and withheld in excess of the one-half to be retained under act of July 2, 1854 .....	\$
Due the United States on account of five per cent. of net earnings to June 30, 1879 .....	\$2,444,428 28
Due the United States on account of transportation 12 months ending June 30, 1879, requirement for sinking fund .....	538,505 06
Due the United States on account of additional payment required to make 25% of net earnings .....	97,530 17
Total due the United States on all accounts .....	
Excess withheld .....	

The above statement is based on the company's charge for carrying the mails, which for the 41 months ending June 30, 1879, is of the amount allowed by the Post-Office Department by the sum of \$876,354.44.

The following statement is based on the amount allowed by the Post-Office Department for the same period:

Transportation performed for the United States in excess of the one-half authorized to be retained by law .....	\$
Due the United States on account of "five per cent." to June 30, 1879 .....	\$2,400,610 56
Due the United States on account of transportation requirement for sinking fund to June 30, 1879 .....	428,549 84
Due the United States on account of "additional payment" required for sinking fund .....	556,098 07
Total due United States on all accounts .....	

Deficit payable by the company in cash .....

Less interest due on judgment of July 27, 1875, to December 31, 1878 .....

Net deficit .....

A suit is now pending in regard to the question of mail compensation, subject to which the company has been called upon to pay \$428,068.43 in the Treasury for the six months ending December 31, 1878, \$246,782.55 applicable to the sinking fund, and \$181,285.88 applicable to the payment of five per cent. of net earnings.

The condition of the Union Pacific sinking fund is shown in appendix I of this report. The amount of deposits on that account to June 30, 1879, is \$201,553.61, which has been invested in five per cent. United States bonds, principal \$193,400, premium \$8,116.25, leaving a balance uninvested at that time amounting to \$37.36. Under the working of the law, it is estimated that the sinking fund will receive for the current year \$750,000, and that "one-half of transportation" and "five per cent. of net earnings," to be credited directly to interest paid, will also equal \$750,000. Such changes as are absolutely required to enable the provisions of the law to be complied with promptly have been embodied in the recommendations for legislation in the latter part of the report. The deduction of interest on first-mortgage bonds from the ordinary net earnings reduces them so that the twenty-five per cent. will not amount to as much as was anticipated when the law was passed, but it is not deemed advisable to recommend any change in this respect.

#### THE CENTRAL PACIFIC RAILROAD COMPANY.

Since the announcement of the decision of the Supreme Court of the United States in the case of the Central Pacific Railroad Company *vs.* Albert Gallatin, No. 972, October term, 1878, on May 5, 1879, this company has rendered such reports as have been required, and submitted its books and accounts to examination.

The company owned, leased, or operated 2,323.61 miles of single-track railroad on June 30, 1879. Of the line owned by the company, 860.66 miles were subsidized by a loan of United States bonds and a grant of lands.

The engineer's report shows in considerable detail the condition of the property covered by the lien of the United States, as well as other portions of the railroad operated by the company. The small map accompanying his report gives a correct idea of the system of roads operated by the company in the vicinity of San Francisco. From his report it appears that some three (3) miles of the subsidized line of the "Western Pacific" (former name of company owning the road between American River and San José) has been abandoned as main track, and consequently has no earnings; and also that about one (1) mile of the same road near Niles has been entirely abandoned and the track removed.

In prorating local business at the time of settlement of the "five per cent." account, the officers did not object to considering the "subsidized and earning" mileage as including these abandoned pieces. There may be some question, however, as to what the lien of the United States might cover in the event of substitution of an entirely different property as the line of the road. The original through line from Ogden to San Francisco was by way of Niles, 883.23 miles, of which 830.66 were subsidized; the present through line is by way of Tracy and Martinez, 894.64 miles, of which 805.75 are subsidized; and the proposed new route *via* Benicia will be 833.47 miles, of which but 737.50 have been subsidized.

The subsidized line from a point five miles west of Ogden to San José is 860.66 miles, and for the major part passes over a country of the most barren and uninviting character. The engineer's report gives a detailed statement of the condition of the property. From his statement it appears that nearly one-half of the tunnels should be lined with masonry instead of timber, as at present; that both the surface and line of the track are for the most part excellent, showing that great care is bestowed upon them; that the road-bed and ditches are kept clean and in shape; that there are no mile-posts or danger-boards at road-crossings; that



wherever needed the road is fenced by the company; that the bridges on the line are getting old and must soon require extensive renewal; that all temporary trestle approaches to the large bridges on the line should be filled and proper masonry abutments built; that bridges require more ties and that guard-rails should also be placed on them; that the company is building a new passenger-station at Sacramento to accommodate their increasing local business; that the water supply is one of the most serious difficulties that the company has to contend with; that the engine-houses are ample and well built.

The shops of the company at Sacramento are well arranged and located so that they can be enlarged without interfering with their present system whenever the requirements of business may demand it. The shops furnish work to over 1,000 machinists and laborers. Much of the yard have been planted with the Eucalyptus, which affords shade, and it is said to destroy malarial influences in the atmosphere.

The hospital of the company is also located at Sacramento, and amply serves the purpose for which it was instituted. It is kept by monthly contributions or assessments on the employes of the company who are all entitled to its benefits. The rooms are scrupulously clean and neat, although plainly furnished. Private-pay patients are sometimes admitted, and in case of accidents passengers as well as others are cared for. The company has a regular corps of physicians along the line of the road, that being necessary for the proper care of the sick at many points where it is difficult to obtain medical aid in time of need.

One of the most marked and important works on the line is the snow-gallery on the Sierra Nevada Mountains, extending for many miles without a break. Built in the most substantial manner to sustain the immense weight of avalanches of snow, they have cost the company quite a large sum of money. The regular service of the engine trains, with a large number of watchmen, and an elaborate telegraph and telephone system is constantly required, at a heavy cost. It is suggested by the engineer that a structure composed of iron might be found more economical. Fires in the snow-sheds cost the company nearly ten thousand dollars during the present season.

The equipment of the road is in good condition and ample. The passenger cars are fully equal to any to be found elsewhere. The company has built a large number of second-class sleeping-cars suitable for emigrants or such persons as choose to carry their own blankets, and has found it quite a success. If these cars could run through from and to San Francisco or the Union Pacific provide similar ones, it would make them much more comfortable for the large number of persons who cannot afford to travel in the regular sleepers. No additional charge is made for passage in these cars, merely the second-class or emigrant fare is paid.

The ferry service between Oakland and San Francisco and the railroad service in Oakland and its suburbs is to be commended. The boats are among the finest of the kind to be found anywhere in the country; large, fast, and luxuriously furnished. The Oakland ferries are generally composed of nine or ten passenger-cars, each capable of carrying 80 passengers, and are kept in good condition and clean. The ordinary fare from San Francisco to Oakland wharf by steamer and back to Oakland, varying from 5 to 8 miles or more, is 15 cents. Cattle are charged \$3 per month, at which price the company's service is probably the best and cheapest of the kind in the country.

Among the new enterprises of the company may be mentioned

filling up of a portion of the long wharf at Oakland, which will take probably two years to complete, and cost in the neighborhood of three-quarters of a million dollars. During the six months ending June 30, 1879, the company expended nearly \$200,000 on this work and on the wharf. Another is the new mammoth train-transfer steamer Solano, to be run between Benicia and Carquinez, on the new through route for overland travel from Sacramento to Oakland, which will be 61.17 miles shorter than the present route via Martinez. The line has cost the company a good deal of money to protect it from the heavy floods of the Sacramento Valley, and where it runs through the "tule" lands, sinking ground has been the cause of much trouble and anxiety. It may be questioned whether the line is as safe or economical as the present one, although it is so much shorter.

The company has expended \$473,790.89 in new construction and improvements and \$201,758.04 in new equipment during the twelve months ending June 30, 1879, and \$1,995,617.35 in maintenance of roadway, track, and buildings. The organization of the track department under Mr. L. M. Clement, the chief assistant engineer, is well adapted to its work, getting good service under quite economical expenditures, and merits special commendation. The main element in low cost of transportation is a good, smooth track, as it is also the only substantial basis of the prosperity of a railroad company, many expenses being largely reduced thereby. With a system embracing over 2,600 miles of track, it is not seen how the service of such an important department can be dispensed with.

The company has already commenced to relocate its tracks and buildings at Ogden independently of any concerted action with the other companies whose termini are at that point. The remarks in regard to better passenger accommodation at this place made in the Union Pacific case apply equally to this company. No time should be lost in rearranging and reconstructing the buildings and tracks.

The company owns some coal-mines at Almy, on the Union Pacific, as well as having an interest in coal properties elsewhere. The consumption of coal during the year reached 134,264 tons of 2,000 pounds, and cost nearly \$6 per ton—fully fifty per cent. more than it costs the Union Pacific, to which company it pays quite a high tariff for hauling from Almy to Ogden.

As on the Union Pacific Railroad, there are millions of acres of land granted to this company on their road which are yet more barren and uninviting than those of that company. An interminable desert of sand and sage-brush, years must elapse before anything can be done with them even by irrigation. From all sales of land to June 30, 1879, the company has received cash and notes to the amount of \$3,007,802.03, or about \$6.21 per acre, from which expenses are to be paid. The quantity sold was 635,425 acres, but included in these are the lands on the line of the Oregon and California Railroad, which are much more valuable than any others owned by the company.

The express business on the Central Pacific system of railroads is done by Wells, Fargo & Co. under a special contract. A statement of the business has been given in speaking of the Union Pacific Express and the questions arising therefrom in regard to the right of the United States to "five per cent." of the net earnings.

The sleeping and parlor car business on this road is done by the company, which owns forty-one (41) first-class sleeping and drawing-room cars. The receipts from this business for the year ending June 30, 1879, were \$166,746.05. For the nine years ending December 31, 1878, the re-

ceipts were \$1,446,661.46, and the extra expenses \$188,586.77, net earnings \$1,258,074.68. The company charges but three each 24 hours for the use of a double berth, while the Pullman charges four (4) dollars for the same service on the Union Pacific. The company's net earnings from this source had been increasing to the Pullman charge, the government would have received \$80,000 as "five per cent." instead of \$60,000, or more, as it has.

So long as the Pullman Company are permitted to operate sleeping-cars on the Union Pacific, the government will fail its just share of the net earnings of that road to apply on its account—namely, the "five per cent." under the act of 1862—courts or Congress interpose.

The passenger service on this road is unexceptionably good. The cars are kept clean and comfortable, both first and second class. The speed is much the same as on the Union Pacific, namely, 15 miles per hour for express and 11 miles per hour for freight. The actual running time is 36 miles per hour for passenger trains and 11 miles per hour for freight trains. It is believed that the track, road-bed, and equipment is good enough to justify the company in increasing the average speed of passenger-trains so as to make an average of 24 miles per hour, including stoppages—gaining 12 hours in the trip from Ogden to San Francisco.

The receipts and expenditures of the company for the year ending June 30, 1879, have been as follows:

#### RECEIPTS.

Passenger—including United States passengers.....	\$1,446,661.46
Freight—including United States freight.....	188,586.77
United States mail.....	
Express—from Wells, Fargo & Co.....	
Sleeping-car service.....	
Coal transportation.....	
Rents.....	
Miscellaneous sources.....	
Gross earnings.....	\$1,635,248.23
Steamer division earnings.....	\$42,205.50
Profits and interest on investments.....	81,578.36
Land receipts.....	407,519.05
Total income receipts.....	\$1,966,551.14
Total receipts.....	\$1,966,551.14

#### EXPENDITURES.

Conducting transportation.....	\$2,124,273.50
Maintenance of way.....	1,995,617.35
Motive power.....	2,199,498.67
Maintenance of cars.....	723,912.63
General expenses (taxes included).....	1,687,062.14
Total operating expenses.....	\$8,730,364.29
Rentals paid leased lines.....	2,563,308.32
Discount and interest.....	539,952.81
Interest on first-mortgage bonds.....	1,620,830.00
Interest on other funded debt.....	1,586,883.33
Expenses of land sales.....	105,291.77
Total income expenses.....	\$14,540,339.22
Total expenditures.....	\$14,540,339.22



Surplus receipts over expenditures.....		\$2,996,338 29
Applicable to payments under the act of May 7, 1878..	1,000,000 00	
New construction .....	473,790 89	
New equipment .....	201,758 04	
Land-bond redemption .....	302,227 28	
		<u>1,977,776 21</u>
Net surplus applicable to dividends.....		<u>\$1,018,562 08</u>

This surplus will not pay a two per cent. dividend on the capital stock of the company.

The liabilities and assets of the company on June 30, 1879, were as follows, viz:

	Liabilities.		Assets.
United States bonds .....	\$27,855,680 00	Road and fixtures .....	\$134,921,352 58
Interest on United States bonds ..	18,435,441 01	Equipment .....	8,014,644 18
Other bonded debt.....	57,063,000 00	Real estate .....	1,499,432 17
Interest due and accrued .....	1,392,243 00	Cash.....	1,187,053 86
Bills payable.....	4,886,258 33	Fuel, material, &c. ....	1,773,060 55
Accounts payable.....	2,126,990 97	Company's stock and bonds ..	24,282 50
Dividends payable.....	2,464 00	Other stocks and bonds, and miscellaneous investments ..	2,640,737 18
Capital stock .....	54,275,500 00	Bills receivable.....	1,238,233 68
		Sinking funds in hands of trustees.....	3,296,259 72
		Accounts receivable.....	1,007,293 56
		United States transportation withheld.....	3,465,444 20
			<u>159,067,794 18</u>
Trustees land-grant mortgage.....	166,037,577 31	Balance—deficit, or debit to income account.....	7,123,078 52
	153,295 39		<u>166,190,872 70</u>
	<u>166,190,872 70</u>		

The account of this company with the government to December 31, 1878, is as follows:

Transportation performed for the United States and withheld, in excess of the one-half to be retained under the acts of July 1, 1862, and July 2, 1864.....	\$1,454,268 44
Due the United States on account of 5 per cent. of net earnings to June 30, 1878 .....	\$1,871,430 00
Due the United States on account of 5 per cent. of net earnings to December 31, 1878 .....	107,258 38
Due United States on account of transportation requirement for sinking fund under act of May 7, 1878 .....	123,852 02
Due United States as "additional payment" required to make 25 per cent. of net earnings, under act of May 7, 1878 .....	181,329 51
Total amount due the United States.....	<u>2,283,869 91</u>

\* Difference, payable in cash..... 829,601 47

The settlement of the accounts of this company with the government, both as regards the "five per cent. of net earnings" and the "requirements under the act of May 7, 1878," was undertaken in the office of the company, in San Francisco, Cal., on the 29th of May, and was practically closed on July 20, 1879.

Many difficulties were met with in applying the principles of the Supreme Court decision in this case. It was found that separate accounts of the subsidized and unsubsidized railroads had not been kept; that the accounts had been kept in coin and currency—the bulk of the ex-

\* Of this amount \$220,520.78 was paid to the United States Treasurer on November 10, 1879, and \$609,080.69 on November 20, 1879.

penses being paid in coin; that, although the "through" and business could be separated on the basis of *currency* as "through" coin as "local," yet some basis of prorating expenses had to be upon; that large amounts had been expended through the general expenses account, which could not properly be charged to the subsidized line; that new construction must be separated into such items as improved the government lien and such as did not; that the revenues of the leased lines reaching over \$2,250,000 annually, and the business of the other lines being unknown, added still more to the complications; and, finally, that so much time had intervened that it was next to impossible to determine quite as exactly as was desired many details of expenditure.

The statement made in Appendix H, schedule *i*, shows the company's estimate of the settlement of the "five per cent." to have been based upon a net of \$41,289,759.51 of net earnings, amounting to \$1,233,296.52, or 3 per cent. The statement shown in schedule *k*, in the same appendix, gives the result arrived at for the government, which may be summarized as follows: Total net earnings—coin (local business), \$36,377,313.13; currency (through business), \$22,691,412.55.

The proportion of mileage of subsidized line to that of the whole line used for "through" business was found to differ so much from the proportion of subsidized line to that of the whole line used for local business, as to require the two distinct settlements as made. Even if, however, having been nearly all paid in coin, some basis had to be found upon for their division between "through" and "local" business. In the absence of full data of sundry kinds, "gross earnings" was not used as a basis. The items composing "real estate," "shops," and "construction" having been entirely omitted from the "expenses" deducted from the "net earnings" subject to the mileage proportion, those items deducted from the subsidized line, were deducted from the proportionate share of the "coin" net earnings, all of such expenditures having been paid for in coin.

These deductions all made, left the net earnings liable to the government of five per cent. by the company as follows:

"Local," coin, \$18,333,506.73; "through," currency, \$21,240,000.00, or of the "local" business, coin net earnings nearly 50.40 per cent. of the "through" business, currency net earnings over 93.16 per cent. and of the total of "local" and "through" business—coin and currency net earnings—the percentage is over 66.96, or a difference in the government of \$218,238.10, being 5 per cent. of 7.22 per cent. of \$59,068,725.87 of net earnings.

The total amount of net earnings in the government statement is \$17,778,966.36 more than that given in the company's statement, and is principally owing to deductions made from the following items: "Real estate," "construction," "discount on currency received," "leased railroads," and "general expenses."

The total amount of the "five per cent. of net earnings," as ascertained by this bureau, for the government from November 6, 1869, to December 31, 1878, is \$1,978,688.38, or \$745,391.86 in excess of the company's statement. The way has been cleared for a better understanding and prompter settlements hereafter. Less than three per cent. per annum on this single item will more than provide for the expense of carrying this bureau as long as it may be required. The money is all in the treasury of the United States.

It is proper that I should acknowledge the valuable assistance of W. F. MacLennan, assistant chief of the warrant division of the Treasury.

Department, in making this settlement with the Central Pacific Railroad Company, as well as the courtesy of all the officers of that company.

The condition of the Central Pacific sinking fund is shown in Appendix I of this report. The amount of deposits on that account to June 30, 1879, was \$126,594.88, which has been invested in five per cent. United States bonds. Principal, \$121,450; premium, \$5,111.96; leaving a balance uninvested at that time amounting to \$32.92.

Under the operation of the law, it is estimated that the sinking fund will receive for the current year ending December 31, 1879, \$600,000, and that the "five per cent. of net earnings" and "one-half of transportation" to be credited directly to interest paid by the United States will be \$400,000. The extent of railroad operated by this company—some 2,400 miles, of which but 860 are subsidized—reduces the average net earnings per mile to so low a sum that the net earnings on the subsidized line under a mileage *pro rata* less the interest paid on first-mortgage bonds do not reach the amount it was estimated they would when the act of May 7, 1878, was under discussion. This is partly owing to the fact that the company leases and operates nearly 800 miles of Southern Pacific Railroad and connections, which do not earn probably more than one-half of the gross earnings per mile of the subsidized and unsubsidized lines in Northern California, in the San Joaquin Valley, and in and around Oakland. The facts show that prior to the lease of these southern lines by this company the averages for the years 1874 and 1875 were as follows, viz:

Miles operated .....	1,307.50
Gross earnings per mile.....	\$11,004.58
Operating expenses per mile.....	\$4,495.21
Net earnings per mile.....	\$6,509.37

And that subsequent to the lease, the averages for the years 1877 and 1878 have been as follows, viz:

Miles operated .....	2,012.50
Gross earnings per mile.....	\$8,447.70
Operating expenses per mile.....	\$4,114.28
Net earnings per mile.....	\$4,333.42

The differences being, that the gross earnings are \$2,556.88, operating expenses \$380.93, and net earnings \$2,175.95 per mile less after leasing the southern lines than they were before. If the government "five per cent." is to be on the amount of net earnings ascertained on the basis of mileage *pro rata*, these railroad companies have only to lease enough of unprofitable lines, of which they may be themselves the owners, to reduce the government "five per cent.," or "twenty-five per cent." even, to a mere pittance of what it should or will be if the accounts are kept entirely separate and upon a correct and equitable basis, as this office is insisting on being done.

#### KANSAS PACIFIC RAILWAY COMPANY.

This company owns, leases, and operates nearly 782 miles of railroad, 393.9425 of which was subsidized by a loan of United States bonds and 638.6 by a grant of lands. The company having defaulted in the payment of interest on its bonds, receivers were appointed and operated the road from November 21, 1876, to June 17, 1879, on which latter day a formal transfer was made, under an order of the court, by them to S. H. H. Clark, esq., general manager of the Union Pacific, as the agent of the owners, who also own and control the Union Pacific Railroad.

The report of the railroad engineer accompanying this report gives a



detailed statement of the condition of the property. It appears from the report that the road-bed and track are for the most part in good condition; that about fifty per cent. of the track is in fair surface and line; that bridges are being put up to replace truss bridges where renewal is required; that the entire bridge system on the road is in good condition, necessary repairs being carefully and promptly made; that bridges are provided with guard-rails; that station buildings are in good repair; that water-tanks and pumping machinery are ample for the class; that new iron turn-tables are being put in where required; that the engine-houses and shops are generally ample and in good condition. The road is also supplied with mile-posts.

The principal shops of the company are located at Armstrong, and are well arranged, substantially built, and fully supplied with all kinds of machinery and materials.

The shops at Denver, owned jointly with the Denver and Pacific Railroad, are neither in good condition nor well arranged, and should be reconstructed at an early day.

This company operates its own express, but, like the Union Pacific, runs Pullman sleeping-cars. Some Horton chair-cars are used on the company, without any extra charge to passengers. The train service on this road is fully equal to any of the Western roads.

During the period that this road has been in the hands of the Union Pacific, nearly two years and seven months—the property has been much improved. In the years 1877 and 1878 over \$1,338,000 was expended in "maintenance of way" alone. The subsidized line passes through good farming country, and has quite a large and profitable passenger traffic, which is now increasing from month to month.

The receipts and expenditures of this road for the year ended 30, 1879, have been as follows:

## RECEIPTS.

United States passengers.....	\$13,828 05
United States freight.....	36,858 30
United States mails.....	87,080 20
Commercial passengers.....	953,528 96
Commercial freight.....	2,751,798 38
Express .....	
Company freight.....	
Miscellaneous.....	
Total earnings.....	\$4,183,093 89
Other income—incidentals.....	

## EXPENDITURES.

Conducting transportation.....	\$513,516 97
Motive power.....	621,136 06
Maintenance of cars.....	179,683 14
Maintenance of way.....	790,140 36
General expenses, including taxes.....	328,370 40
Total operating expenses.....	\$2,432,846 93
Net earnings.....	\$1,750,246 96

The liabilities and assets of the company on June 30, 1879, were as follows:

Liabilities.		Assets.	
United States bonds.....	\$6,303,000 00	Road and equipment.....	\$34,359,540 66
Interest on United States bonds..	4,618,613 09	Cash.....	1,307,742 84
Other bonded debt.....	22,130,100 00	Materials.....	220,321 64
Interest on other bonded debt....	5,621,266 10	Funds with trustees.....	1,827,450 36
Bills payable.....	884,763 20	Bonds and stocks.....	3,084,492 03
Accounts payable.....	234,317 12	Bills receivable.....	8,615 80
Pay-rolls.....	304,224 20	Accounts receivable.....	827,401 56
Suspense account.....	2,417,475 56	Interest repaid to United States	1,367,588 10
Trustee.....	376 09	Due from United States.....	1,409,003 04
Capital stock.....	9,689,950 00	Land assets.....	340,102 66
		Funding coupons.....	38,600 00
		Vouchers.....	55 28
			44,786,822 97
		Deficit or debit to income account.	7,605,862 39
	52,302,185 36		52,392,185 36

The account of this company with the United States, so far as relates to the 5 per cent. of net earnings and the half-transportation compensation withheld, has not been finally adjusted. Appendixes F, G, and H give details so far as ascertained.

#### CENTRAL BRANCH UNION PACIFIC RAILROAD COMPANY.

This company, the successor of the Atchison and Pike's Peak Railroad Company, and, so far as its rights and obligations under the Pacific Railroad acts are concerned, the assignee of the Hannibal and Saint Joseph Railroad Company, owns and operates 100 miles of railroad, extending from Atchison to Waterville, which was subsidized by a loan of United States bonds and a grant of land.

In addition to the road owned, the company also operates, under lease, 158 miles of other railroad west of Waterville.

The report of the engineer exhibits the condition of this property. It appears that a good many embankments and cuts are not wide enough; that while the surfacing is inferior, the track is in fair line; that the weight of iron on the first 20 miles is but 50 pounds to the yard, when it should have been 56 pounds in accordance with the standard adopted by the board in 1866; that the masonry work on the line is good, but that the Howe-truss bridges require strengthening. The road runs through a good farming country, well supplied with water and facilities for economical operation. The wonderful results in the business of the road during the last fifteen or eighteen months are attributable entirely to its policy of building extensions or branch roads in various directions. These branch lines are all comparatively new and in good condition. The company has found it necessary to add largely to its equipment, having purchased 20 locomotives and the passenger and freight cars required by its increasing business; with the exception, therefore, of the small amount of equipment originally purchased, which is considerably worn, the road is now well equipped. Miller platforms and air-brakes are attached to passenger cars.

In a previous part of this report reference was made to the great improvement of business on this road, and a statement given extending over the last four years.

No report of the earnings and expenses or of the receipts and expenditures of this company for the year ending June 30, 1879, has been received.



From the meager information furnished, the following statement of the business for the calendar year 1878 has been prepared:

Gross earnings .....	
Operating expenses.....	
Net earnings.....	

The above net earnings are on an average of 172 miles operated. Expenditures made from net earnings were chiefly for new equipment, the amount of \$140,000; rentals of leased lines, \$66,000; taxes and some other smaller payments the details of all which for 1878 have not been furnished—the above amounts being estimated.

No statement of the liabilities and assets of this company or the condition of their general ledger has been furnished for either the calendar or fiscal year.

The transportation account and the five per cent. account of the company are still in an unsettled condition, this road being one of the most complicated of settlement is increased by the number of branch lines operated. These branches are owned by the same parties who own the Central Branch, but under other corporate names. Practically the branch lines are leased to themselves. No separate accounts of the subsidized line are kept, and on the basis of mileage rates and construction and equipment, to be included in expenditures decided by the Supreme Court, the more railroad the company operates the less will be the net earnings upon which the government will be entitled to receive "five per cent." The only remedy will be the establishment of a sinking fund in the Treasury of the United States for this company, similar to those established for the Union Pacific Central Pacific.

The past history of this company was one of great difficulty and ship, growing out of the legislation of 1866, which located the terminus of their subsidized branch line "in the woods," without connection with the "road through Kansas," which it was expected to enable them to join the Union Pacific at the 100th meridian and the benefit of being a branch of the Pacific Railroad. For that fact that the branches that have made connection with the Union Pacific have been little benefited thereby, but rather harassed, burdened, and even bankrupted, it may not have been altogether detrimental to the real interests and prosperity. The company is doubtless entitled to some equitable claim upon the government, growing out of the fact sustained by it by reason of the legislation referred to.

#### THE SIOUX CITY AND PACIFIC RAILROAD COMPANY

This company has rendered all reports that have been called for from time to time in a full and satisfactory manner.

The railroad owned by this company is 107.04 miles, extending from Sioux City to California Junction, from California Junction to Missouri Valley, and westward to Fremont, Nebr. The same line extends from Sioux City to Fremont, 101.77 miles, which also include the Missouri River, the crossing of which by a ferry service was temporarily accepted by the commissioners in lieu of a bridge, which was estimated for. This company operates under lease the Elkhorn and Missouri Valley Railroad to Wisner, 51.09 miles.

The engineer's report alludes to the fact that a bridge across the Missouri was originally contemplated as a part of this railroad. His opinion on this question are as follows: "The act of Congress providing



subsidized roads shall be completed in sections of 20 consecutive miles before bonds shall be issued. There is room for doubt whether the section including the ferry crossing can properly be considered as 'consecutive,' although it was accepted as such by the examining commissioners. Without doubt a bridge across the Missouri River was contemplated as a necessary part of the branch of the Pacific Railroad system to Sioux City. At the time the road was under construction, estimates were submitted by the railroad company of the probable cost of the road, including the cost of the bridge, and a ferry suggested as a temporary expedient. Owing to the uncertain character of the river, it is often necessary to change the landing of the ferry on either shore, and at any time its operation may be entirely suspended by some change in the stream. It is very doubtful, however, whether the business of the company, either present or prospective, will justify the construction of a bridge, and, also, whether the probability of recovery to the government of any portion of the subsidy would be increased thereby."

The condition of the road and property in Iowa is fair and fully equal to the requirements of the business, but in Nebraska the road is in poor condition, iron and ties both needing renewal. The new bridges on the lines are in good condition, but the Howe truss of 160 feet span needs immediate renewal. Bridge floors are laid without guards.

The business on the road during the first nine months of the present calendar year shows some slight improvement over that of last year, as the figures herewith given indicate:

	Nine months, 1879.	Nine months, 1878.	Increase.	Decrease.
Gross earnings.....	\$260,616 06	\$243,544 78	\$26,071 28	.....
Expenses.....	194,628 59	200,890 47	.....	\$6,261 88
Net earnings.....	74,987 47	42,654 31	32,333 16	.....

These earnings are for 107.42 miles operated. The interest for nine months on first-mortgage bonds is \$73,260. The amount of mail compensation withheld during the same period has been more than \$6,000; so that, without deducting anything for the 5.84 miles of unsubsidized line, the net receipts are insufficient to pay the interest on first-mortgage bonds.

The earnings and expenditures of this company for the year ending June 30, 1879, are as follows:

## EARNINGS.

United States passenger.....	\$900 15	
United States freight.....	1,107 81	
United States mail.....	8,255 88	
		\$10,263 84
Commercial passengers.....	86,429 46	
Commercial freight.....	246,938 40	
Express.....	3,012 01	
Car service.....	1,139 50	
Miscellaneous.....	5,546 05	
		343,065 42
Total earnings.....		\$353,329 26

## EXPENDITURES.

Expenses of transportation .....	\$107,956 2
Maintenance of way .....	99,263 7
Maintenance of rolling-stock .....	27,621 7
Maintenance of buildings and machinery .....	3,964 8
General expenses .....	15,402 5
Total operating expenses .....	
Rentals .....	14,986 2
Interest on debt, &c .....	110,695 3
Miscellaneous payments .....	1,239 8
Total income expenses .....	
Total expenditures .....	
Net deficit .....	

In the suit of the United States vs. this company, it was that the company had no net earnings subject to the payment per cent. to the United States, inasmuch as the annual interest or payment on account of first mortgage bonds was in excess of the net earnings of the road.

The peculiar circumstances affecting this road, especially as Missouri River crossing, the comparatively small population of from which its business is drawn, its very high cost per mile of land obtained under the land-grant, the refusal of the line of the Pacific Railroad to afford it ordinary business relations, and the slight prospect of its ever earning money to pay the annual interest on its first mortgage and States subsidy bonds—together amounting to \$195,379.20—make it difficult to determine just what is best to do so as to protect the interests of the government in it.

To say that the road ought never to have been built on this location does not help the matter. A bridge across the Missouri River where the ferry is now established will be costly and is not justified by the amount of traffic done; it could not earn the interest on the bonds. It might be advisable for the company to abandon the Missouri River crossing, to dispose of its line in Iowa to one of the large cities, connecting at Sioux City or Missouri Valley, and devote its efforts to the Northern Nebraska business or a new line through Nebraska to a point opposite Sioux City to Fremont.

Even if such a policy should result in enabling the railroad to pay the interest on its first mortgage bonds, it would not show how the interests of the United States would be immediately benefited.

In the course of another decade, should the road be able to pay the first mortgage bonds' interest, it is possible that business might be improved as that the United States will begin to receive more than the mere one-half of compensation for mail and transportation performed. In the mean time it is suggested that consideration be made as to how and why this road was built on its present location, and as to the actual disposal of the proceeds of the subscription.

The liabilities and assets of this company on June 30, 1879, were as follows:

Liabilities.		Assets.	
United States bonds .....	\$1,628,320 00	Road and equipment .....	\$5,350,137 74
Interest on bonds .....	1,073,500 69	Material .....	46,733 16
First mortgage bonds .....	1,628,000 00	Cash .....	42,165 64
Interest on bonds .....	50,115 00	Company's bonds and stocks .....	5,000 00
Bills payable .....	5,000 00	Accounts receivable .....	7,184 79
Pay rolls and vouchers .....	33,856 47	Due from United States .....	102,427 62
Accounts payable .....	87,426 38	Deficit or debit (balance to income one-half) .....	1,020,949 69
Capital stock .....	2,068,400 00		
	6,574,618 54		6,574,618 54

#### THE DEFICITS OF THE PACIFIC RAILROAD COMPANIES.

From the foregoing statements of the liabilities and assets of these companies it appears that the balances of deficit, or amounts debited to income account in excess of amounts credited, are as follows:

Union Pacific .....	\$991,061 27
Central Pacific .....	7,123,078 52
Kansas Pacific .....	7,605,363 39
Central Branch Union Pacific .....	
Sioux City and Pacific .....	1,020,949 69

These balances should have been on the other side, or at least should not have been so large.

The Union and Central Pacific Companies appear to have large floating debts. Their surplus income, therefore, has not been sufficient to warrant the large investments made in branch lines and kindred enterprises and at the same time the payment of the quite large dividends which have been declared from year to year.

The Kansas Pacific and Sioux City and Pacific deficits are very large in comparison with the amount of capital stock, and are chiefly caused by inability to earn sufficient money to pay the interest on funded debt.

It may be advisable for all of these companies to pay no further dividends until these balances are canceled, or their side investments and floating debt reduced, for the simple reason that borrowing money ostensibly for investment in branch lines, steel rails, &c., is really for payment of dividends to stockholders.

#### THE RAILROAD CORPORATIONS TO WHICH LAND GRANTS HAVE BEEN MADE.

Of the roads owned by these companies, the Denver Pacific, the larger part of the Burlington and Missouri River in Nebraska, and the larger part of the Southern Pacific—northern division, have been examined by the engineer, to whose report reference is made as to details of the condition of the properties. The Oregon Branch of the Central Pacific—unsubsidized with bonds—is also reported upon by him. The Oregon and California Railroad, and the Oregon Central Railroad, in Oregon, and the Pacific division of the Northern Pacific, were examined by me during the past year.

The location and condition of these roads generally is of a character similar to those already reported on, varying according to the business and financial circumstances and requirements.

The Denver Pacific Railroad is well located and of light grade and



curvature. Road-bed and track are in moderate condition, renewals of ties being needed. Water-stations, buildings, and equipment generally, require considerable repair.

The Burlington and Missouri River Railroad in Nebraska located road, of such light grades and easy curvature that the haul of a freight locomotive is from 55 to 65 loaded cars. This for the very low percentage of operating expenses to gross earnings of this company—about thirty (30) per cent. Some steel rail has been used, and oak ties are altogether used on this road. The bridges are well floored, and provided with guard-timbers.

The Southern Pacific, northern division, is that portion owned by this company, which is operated by it, the remainder being leased to and operated by the Central Pacific. The road between San Francisco and San José, on which considerable passenger traffic is laid with 50-pound steel rail, gravel-ballasted, and is in good condition. The red-wood ties used on the California roads are valuable, and but for their softness could not be bettered.

The Oregon Branch of the Central Pacific from Roseville to Medford, 151.7 miles, runs through a good farming country, wheat being the principal product. The bridges and trestles, of which there are a large number, are generally in good condition. Track is principally 56-pound steel rail laid in the old style with joint-chairs. Buildings are ample and require little repair.

The Oregon and California Railroad from Portland to Roseburg, 100 miles, runs through the Willamette Valley and some of the finest farming country of the State. The road is in fair condition, and doing an improving business. Twelve miles of trestle-work add quite largely to the operating expenses.

The Oregon Central, from Portland to Saint Joseph, 48 miles, runs through fine farming country, has some quite expensive work on it. The remainder of the road has not been sufficient to enable it to be kept in repair, but the extension southward fifty miles to Albany gives it more business, the entire road has probably been put in thorough repair this fall. There are many long and high trestles which require renewal of the iron in the track is much worn, and large renewals are needed.

The Northern Pacific Railroad, from Kalama on the Columbia River to Tacoma on Puget Sound, and the branch line to Wilkeson, were completed during the year. The location of the terminus at Kalama has been a success, as steamer communication with Portland is maintained with the usual delays, changes, and transshipments. The road and track are in good condition, as are also the bridges and trestles on the branch line. Business of the road is improving, but is light. The country through which the road runs is well timbered and watered, and is very desirable for settlement as any met with in the west, grain crops being large and unfailing. The company's coal mines are being profitably worked, but the coal is of an inferior quality. Recent discoveries of extraordinary seams of excellent bituminous coal in the immediate neighborhood of the company's mines give hope that the business of the road will largely increase in the future.

The Visalia division of the Central Pacific and the leased roads of Goshen, aggregating 924.25 miles of railroads, are in good condition. Under the same general supervision and system as the main line of the Central Pacific, these roads are more than equal to all that is required of them. Portions of the road have been of an expensive character, especially those over and through the Tehachapi and the San Geronimo Mountains. Hundreds of miles of the country are des-

most barren kind. Water-trains are needed on many parts of the road. The line south of Goshen, unless built with a view to being used as an overland route, is many years in advance of the requirements of business, and cannot possibly pay at present.

The condition of the business of these roads, and also of the Texas and Pacific, Northern Pacific—Eastern Division, and the Saint Louis and San Francisco Companies is given in the tables appended to this report. The properties have not yet been examined and reported on by the engineer. The extent and value of the respective land grants are also given in the tables.

#### RAILROADS BUILT BY THE AID OF LANDS GRANTED BY THE UNITED STATES TO STATE OR TERRITORIAL GOVERNMENTS.

Three of these railroads have been examined and reported on by the engineer, namely, the Hannibal and Saint Joseph in Missouri, the Saint Joseph and Western (late Saint Joseph and Denver City) in Kansas and Nebraska, and the Burlington and Missouri River in Iowa (the Iowa Division of the Chicago, Burlington and Quincy Railroad).

None of the roads of the remainder of this class have been examined or visited during the year. Many of them have, however, made reports to this office of the condition of their business and affairs.

Of these roads the Iowa division of the Chicago, Burlington and Quincy, extending from the Missouri River to Burlington (279 miles) was found to be in excellent condition as to road-bed, track, bridges, switches, signals, and general system of operation. Nearly the whole length of the road is laid with steel rail of 60 to 66 pounds to the yard, on oak ties, and at least 50 per cent. of the track is ballasted and in good shape. Fences, mile-posts, and general policing of the road indicate a high standard, probably the best of the Western roads. A unique and convenient plan used on this road for numbering openings, bridges, culverts, &c., is by the mile; for example, in the one hundredth mile, if there were four openings, they would be numbered 100 A, 100 B, 100 C, and 100 D, thus exactly locating the bridges, and obviating the necessity of changing many numbers when one opening is done away with or a new one established. The passenger equipment of the road is in the best condition, and supplied with all improvements to promote safety and comfort.

The Saint Joseph and Western Railroad was examined between Hastings and Saint Joseph. This road has recently come under the control of the owners of the Union Pacific. There is a good deal of work required to make the road-bed what it should be, and to bring the track up to an economical condition. The road runs through a thriving country, and should certainly be able to sustain itself.

The Hannibal and Saint Joseph Railroad from Hannibal to Saint Joseph (206 miles) is in fair condition, nearly three-fourths of it laid with steel, well fenced, and carefully operated. A good portion of the road east of Cameron is well ballasted. Some of the bridges on the road appeared to need strengthening and others renewing, one of which the company assured me will be renewed in the spring, and the utmost vigilance exercised as to all. The rolling stock is rapidly undergoing thorough repair, and is now better than it has been for some years.

The condition of the business of all of these roads and that of the others enumerated in Appendix A, so far as reports and returns have been made, is given in the tables appended.

## CONDITIONS AS TO GOVERNMENT TRANSPORTATION

The most important question for consideration in regard to roads is that of the conditions attached to the land grants, and the government is receiving the full benefit of those conditions. Appendix E gives a full list of these conditions and the names of companies to which they attach.

In the major portion of these railroads the government is the user of the road "free from toll or other charge upon the transportation of any property or troops of the United States." On them transportation of troops and property of the United States is to be free of all cost or charge when so required by the government. In others, fair and reasonable rates may be charged, not to exceed those paid by private parties for the same kind of service; in many cases Congress has reserved the right to fix the price to be paid for the mail; and in some others Congress has reserved the right to fix the rates for government transportation, but all rates that the companies may charge.

In my last Annual Report, pages 28 and 29, and Appendix I, these questions were discussed at some length.

In the particular cases of the roads upon which the condition is that the government shall have "the use of the road free from toll or other charge," it was stated that upon a certain showing the average value of this condition to the government was equal to a deduction of 20 per cent. from tariff rates. There are thirty-eight railroads in the United States subject to this condition on government transportation aggregating 6,000 miles of track. Supposing that government transportation on these roads at tariff rates be \$600,000 per annum, that is too low an estimate—and the deduction for the value of this right be fixed at 20 per cent. from tariff rates, as was proposed in the last report, of these railroads, the government would pay \$480,000 annually in money; whereas if the deduction on the principles of justice and equitable remuneration to the companies is found to range all the way from 40 to 60 per cent. from tariff rates, as it is believed it will be, the government would have to pay but \$300,000 annually in money, thus resulting to a saving of \$180,000 per annum to the government.

With a view to still further elucidate the bearings of railroad transportation upon this important question, a table has been prepared and is given in Appendix L in this report, showing the conditions upon which 5,000 miles of leased railroad are operated. The roads have been selected from all parts of the country, wherever the necessary data and information could be found sufficiently explicit.

*Average* is of as little account in settling the price to be paid for a leased line as it is in fixing the rate or amount of deduction from the government is entitled in the cases in question.

One of the averages, namely, that showing the cost of maintenance of way, is of use to a certain extent, inasmuch as it shows how much railroad companies pay for maintaining road—an expense not entered into the calculation of cost of doing transportation for the government, as the companies are required to maintain the road whether the government should use its own rolling stock or that of the companies, and into what it costs the respective companies as rental of road.

Now, this rental of road in many cases is exactly the amount of deduction to which the government is entitled. For instance, the Erie,burgh, Fort Wayne and Chicago is leased by the Pennsylvania Company. The length of road, 468 miles, of which 466 is steel rail, largely



the cost of maintenance of way, which is but 11.81 per cent. of gross earnings. Gross earnings for 1878, \$7,830,109; amount paid by lessees to lessor as rental, \$2,262,236; added to \$854,084, amount expended in maintenance of way, makes \$3,116,320, amount paid by the Pennsylvania Company for the use of the road, which is forty-three and nine-hundredths (43.09) per cent. of the gross earnings. Or, to take a Western road, the Atchison, Topeka and Santa Fé Company leases five branch roads, as shown in the appendix, aggregating 336.92 miles. The gross earnings of these lines are \$1,063,617 for 1878; amount expended by lessee in maintenance of way is \$235,664, or 22.15 per cent. of the gross earnings; amount paid by lessees to lessors, \$364,734, or 34.29 per cent. of gross earnings; together amounting to \$600,374, or 56.44 per cent. of the gross earnings, being the value to the lessors of the use of their roads operated under lease by the Atchison, Topeka and Santa Fé Company, the lessee.

Another instance of an entirely different character is that of the Cincinnati Southern Railway, owned by the city of Cincinnati and operated by the Cincinnati Southern Railway Company under contract with the trustees. The Cincinnati Southern Railway Company is a common carrier company, with a paid-up capital stock of \$261,895, of which \$247,014.89 was invested in equipment on June 30, 1878. The carrier company operates the road, paying out of gross earnings (1) current operating expenses, (2) all damages or liabilities and other expenses, including taxes incurred and paid by said company on its capital and personal property used in operating the railway, (3) monthly to said company such sum as shall amount to seven per centum per annum on its paid-up cash capital, and (4) the balance to the trustees as rent. The length of road operated is 158.30 miles; the gross earnings for the year 1878 were \$506,180; the amount received by the trustees was \$281,508, or 55.61 per cent., from which they are required to pay for maintenance of way. The road being a new road and well built, these expenses must be light for some years to come.

From these examples it is very evident (1) *that no one fixed rate* of deduction can possibly be equitable for all of these companies, and (2) that the deduction for the use of a railroad free of toll or other charge by the United States, by which it is understood that the company must keep the road and its appurtenances in repair, should certainly not be less than the rental which such a railroad is worth to its owners.

#### THE TABLES ATTACHED TO THE REPORT.

The tables placed after the appendixes show (1) organization, (2) ownership, (3) officers, (4) characteristics of road, (5) cost, (6) funded debt, (7) financial condition, (8) receipts, (9) expenditures, (10) operations of land departments, and (11) comparative statements of earnings and expenses of all the companies reporting to this office so far as the information affords.

#### RECOMMENDATIONS AS TO LEGISLATION.

The following recommendations for legislation to remedy defects in present laws, to promote the welfare of these railroads, and to protect the government in its interests and rights, are respectfully submitted:

First. That the act of Congress approved May 7, 1878, entitled "An act to alter and amend the act entitled 'An act to aid in the construction of a railroad and telegraph line from the Missouri River to the

Pacific Ocean, and to secure to the government the use of the postal, military, and other purposes,' approved July first, eight hundred and sixty-two, and also to alter and amend the act of Congress approved July second, eighteen hundred and sixty-four, in amending said first-named act," be amended (1) so as to authorize the fund to be invested in the first-mortgage bonds of the respective companies named therein, or such United States bonds as the Secretary of the Treasury may prefer, and (2) so that the date of payment of the additional amount required under section 4 be changed to the first of April in each year, and (3) that the settlements and payments of the sinking-fund be required to be made semi-annually instead of annually.

(In support of these amendments, it is urged, as to the "first-mortgage bonds" investment of the sinking-fund, that they pay six per cent. interest—the present investment paying only five per cent.; that the premium is but about ten per cent., while that of the United States bonds has been over five per cent.; that they are coequal with United States subsidy bonds as to maturity; that the first-mortgage bonds of the companies are *first* to be paid by the accumulated sinking-fund; and that when these first-mortgage bonds are paid the United States bonds become a first lien on the property. If this should be authorized, authority should at least be given to invest the sinking-fund in United States subsidy or other United States bonds. These companies find it necessary to aid or build branches and extensions in order to protect the trunk-line business, upon which mortgages are now placed on bonds issued. The companies propose that in lieu of the annual payments now required to be made by them into the sinking-fund, the first-mortgage bonds of these branch lines be accepted at par for the sinking fund. If these bonds pay six per cent. interest, are guaranteed by the trunk-line company, and are issued to an amount of *not* over \$7,000 or \$8,000 per mile of railroad—they certainly will be quite as valuable a security as the first-mortgage bonds of the trunk-line, which were issued to an amount of nearly \$26,000 per mile. Their branch-line bonds will be much more profitable for the sinking fund.

As to the change of date of payment, it is found that there is a wide interval between the close of the year's business and the date of payment, an insufficient time wherein to settle their accounts for the year. The companies themselves, the transportation accounts by the agents, the officers of the Treasury, and for this office afterwards to examine the accounts and report the amount due under the law.

As to the semi-annual settlements proposed, it is urged that the companies would accommodate themselves to the fiscal year of the United States, so that they could be much more easily effected; and that the sinking-fund would be considerably benefited by the more frequent payments.

Second. That sinking funds be established in the Treasury for the ultimate payment of the indebtedness of the Kansas Pacific, Central Branch Union Pacific, and Sioux City and Pacific Railroad Companies upon the same basis as those for the Union and Central Railroad Companies.

(In urging this legislation it is believed that in no other way can the interest of the government in these roads be protected. The object of all of them is improving to such an extent, especially that of the first-named, that no difficulty as to their ability to make such payments is anticipated. The five per cent. of net earnings and one-half per cent. for transportation on these roads are altogether out of proportion to any

reimbursement of either the principal or accumulating interest of the government loan.)

Third. That the act of Congress, approved June 19, 1878, entitled "An act to create an Auditor of Railroad Accounts, and for other purposes," be amended (1) by changing the title of the office to "Commissioner of Railroad Affairs"; and (2) by requiring the several departments of the government to transmit the accounts of the five subsidized Pacific Railroad Companies for transportation services of every kind, including the mails, through this office, to the respective accounting officers of the Treasury, and that all disallowances or differences in the said accounts found by the accounting officers upon settlement be reported to this office before final payment or allowance of the same; and (3) that this office report to the Treasury Department what changes, if any, are required in the payment or disposal of the moneys so found to be due to the said companies.

(Inasmuch as many other duties than those connected with the accounts of the railroad companies are imposed upon this office relating to the property and affairs of the companies generally; that the bureau officers of the Interior Department are so called; and that there is some misconception as to the functions implied in the title as well as confusion as to which department, the Treasury or the Interior, the bureau is located in, it is believed that the change of title recommended is advisable.)

As to the legislation recommended requiring the transportation accounts of the companies to be transmitted through this office, it is considered absolutely indispensable to a correct knowledge of the condition of the whole account between these companies and the government. If such accounts are not reported and consolidated in this office, they certainly should be in some other, otherwise it is impossible to know their condition from time to time.)

Fourth. That the acts of Congress of July 1, 1862, and July 2, 1864, creating the Union Pacific Railroad Company and authorizing the Pacific Railroad to be built, be amended so that any company which may have already abandoned or which may hereafter abandon any portion of its subsidized line of railroad, or which may divert through-mail, through-passenger, or through-freight or other traffic of any kind from the subsidized line of railroad to a new or other unsubsidized line of railroad, shall be required to substitute for the lien and conditions as required for the security of the United States on the subsidized line, like lien and conditions on the new or other unsubsidized line; otherwise, that all such traffic aforesaid of every kind shall be required to be done and retained only on the subsidized line; and (2) that this office be empowered to require bridges and other structures to be put into proper condition so as to insure safety of travel upon these lines of railroad.

(Section 18 of the act of Congress approved July 1, 1862, above referred to, authorizes these amendments to be made if necessary.

It reads:

"And the better to accomplish the object of this act, namely, to promote the public interest and welfare by the construction of said railroad and telegraph line, and keeping the same in working order, and to secure to the government at all times (but particularly in time of war) the use and benefits of the same for postal, military, and other purposes, Congress may at any time—having due regard for the rights of said companies named herein—add to, alter, amend, or repeal this act."

These amendments are believed to be strictly in compliance with the provisions of the above-quoted section. If a company has the right to abandon *one mile* of the subsidized line, it may abandon the whole road;



if it has the right to deprive the government of its proportion of transportation for the reason that it is not performed on subsidized line. *one mile* of road, it may deprive it of all by diverting the through and other business to any new or other unsubsidized line it may purchase. The questions involved are serious and important, and it is believed that the time has arrived for some positive legislation on this subject.

It is simply to promote the public interest and welfare that authority is asked for to require the companies to maintain their and other structures in good and safe condition. The numerous accidents that are occurring, and the uncertain condition of many bridges on the Western railroads generally, seem to require precaution in this regard now and hereafter.)

Fifth. That all acts of Congress which require the Secretary of the Treasury to withhold payment for services from the Pacific Railroad Companies be repealed; that all moneys in the Treasury belonging to the Pacific Railroad Companies, being the amount in excess of compensation for services withheld and applied to the payment of taxes by the United States, be made applicable to the payment of taxes by the companies, "found to be due by them, respectively their respective sinking funds; and that provision be made so that the accounts of these companies for services performed be promptly settled and disposed of by payment of the amounts due to the Treasury if the companies are legally indebted to the United States, and to the respective companies if they are not legally indebted to the United States.

(The recent decisions of the Supreme Court having laid the foundation for final adjustment of the five per cent. and other accounts of these companies, before these final settlements can be effected it is necessary that the restriction as to the payments for government transportation be removed and provision made for a proper disposal of the same.)

Sixth. That the time for the completion of the Northern Pacific Railroad be extended five years from July 1, 1879.

(This company is going on with its construction at both ends of the line, and expects to have two to three hundred miles additional opened for use by the summer of 1880. It is anticipated that the general improvement in business will enable this company to carry out the successful completion this great northern line to the Pacific. The people of Oregon and Washington Territory, the great Northwest of the coast, desire more direct means of communication with the United States. The company's affairs are in good condition and under government control.)

Seventh. That the several departments of the government be authorized and required to enter into annual contracts with all subsidized land-grant railroad companies for rates of passenger and freight transportation.

(This is recommended in order for the government to obtain the lowest rates on these railroads that are paid by any corporation or person. In many instances, it is believed, the government is paying the very highest tariff rates, when the records of the companies show that both passengers and freight must have been carried for prices much below those paid by the government.)

Eighth. That the rate of payment for mail service on the several railroads which received land grants upon, the condition that Congress

fix the same, be reduced to a merely nominal sum, or the actual cost of performing the service.

(It is found that many of these railroads have received and are still receiving millions of money as the proceeds of sales of granted lands, and that the government is in no way directly benefited by the grant. If a company has received as proceeds of such land, say one million dollars (\$1,000,000), and the ordinary compensation for mail service as allowed by the Post-Office Department is \$75,000 per annum, it would be but equitable for some deduction to be made therefrom on account of the real money value of those proceeds; at 5 per cent. per annum the deduction would be \$50,000. The railroad companies should not complain, as it is part of the contract under which the lands were accepted. The people, through the government, would be greatly benefited by reduced cost of mail transportation. If a railroad company is receiving such large sums as proceeds of lands that it can afford to make quite large dividends from that source to the stockholders, there is no reason why the conditions should not be conformed to in such cases.)

Ninth. That section 13 of the act approved July 27, 1866 (14 U. S. Stat. at L., p. 297), as far as the same relates to reports to be rendered by the Atlantic and Pacific Railroad Company to the Department of the Interior, be repealed.

Tenth. That section 13 of the act approved March 3, 1871 (16 U. S. Stat. at L., p. 577), relating to reports to be made by the Texas and Pacific Railway Company to the Department of the Interior, be repealed.

#### THE PERSONNEL AND EXPENSE OF THE OFFICE.

The following-named persons were employes of this office on June 30, 1879:

Theos. French, Auditor.....	annual salary	\$5,000
Southwick Guthrie, bookkeeper.....	do. do.	2,400
August Duddenhausen, assistant bookkeeper.....	do. do.	2,000
Wm. C. Pennywitt, clerk.....	do. do.	1,400
Wm. F. Ryan, copyist.....	do. do.	720
Bradford Whiteley, messenger.....	do. do.	300

On this day, November 1, 1879, the personnel is as follows:

Theos. French, Auditor.....	annual salary	\$3,600
Southwick Guthrie, bookkeeper.....	do. do.	2,400
Aurin B. Nichols, railroad engineer.....	do. do.	2,000
August Duddenhausen, assistant bookkeeper.....	do. do.	2,000
Miss E. W. Rogers, clerk.....	do. do.	900
Albert S. Seely, copyist.....	do. do.	600

Of the appropriations for this office for the fiscal year ending June 30, 1879, in all amounting to \$14,400, the following sums have been expended, viz: Salaries, \$11,691.93; traveling and incidental expenses, \$2,524.17; in all amounting to \$14,216.10.

The appropriations for the office for the current fiscal year ending June 30, 1880, are as follows: "Office of Auditor of Railroad Accounts—For auditor, \$3,600; bookkeeper, \$2,400; assistant bookkeeper, \$2,000; railroad engineer, \$2,000; one clerk, \$1,400; one copyist, \$900; traveling and other expenses, \$1,500; incidental expenses, \$250; in all \$14,050." This is \$350 less in all than the amount originally appropriated by the act of Congress creating the office.

The estimates which have been submitted for the fiscal year ending June 30, 1881, are as follows: For Auditor, \$5,000; railroad engineer,

\$3,000; bookkeeper, \$2,400; assistant bookkeeper, \$2,000; one messenger, \$1,600; one clerk, \$1,400; one copyist, \$900; one messenger traveling and other expenses for examination of books and accounts, \$2,000; traveling and other expenses of engineer inspecting property, \$1,000; incidental expenses, \$500; in all \$20,400.

It is not deemed necessary here to state why the salary of the engineer should be appropriated for as it was originally fixed by law, but the bureau has accomplished, self-evident in its results, being a stronger argument than any other reasons which might be advanced.

It is respectfully submitted that the salary of the railroad engineer should be fixed at three thousand dollars instead of two thousand, as it is possible to obtain or retain any one with the requisite experience and ability to fill the position at \$2,000 per annum.

It affords me pleasure to acknowledge the ability, industry, and application with which I have been supported by all of my subordinates, those who have been transferred to other positions in the department as well as those who are now employed in the office.

I have the honor to be, sir, very respectfully, your obedient servant,  
THEOS. FRENCH

The Hon. SECRETARY OF THE INTERIOR.

## REPORT OF RAILROAD ENGINEER.

DEPARTMENT OF THE INTERIOR,  
OFFICE OF AUDITOR OF RAILROAD ACCOUNTS,  
Washington, D. C., November 1, 1878.

SIR: Since my appointment as Railroad Engineer in your bureau on August 18, 1879, I have examined the following named railroads and come under the jurisdiction of the bureau by act of Congress on June 19, 1878, viz:

1. Railroads which have been subsidized by the United States Government with bonds, lands, right of way, depot grounds, and materials: Union Pacific Railroad, Central Pacific Railroad, including the Northern Pacific Railroad of California; Kansas Pacific Railway, Branch Union Pacific Railroad, and Sioux City and Pacific Railroad.
2. Railroads which have received lands, right of way, depot grounds, and materials by direct grant from the United States Government: Denver Pacific Railroad and Telegraph, Southern Pacific Railroad of California, Burlington and Missouri River Railroad in Nebraska, Colorado and Oregon Railroad (consolidated with the Central Pacific Railroad).
3. Railroads which have received lands, right of way, depot grounds, and materials by grants from the United States Government in States in which they are located, viz: Missouri—The Hannibal and St. Joseph Railroad; Kansas—The St. Joseph and Western Iowa Railroad; Iowa—Chicago, Burlington and Quincy Railroad.

The limited amount of time between the date of my appointment and the date on which a report is required, rendered it impossible to make a minute inspection of all these lines. It is hoped, however, that the following report will give a tolerably good idea of the general condition of the roads. In making the examinations, more attention has been



given to the lines which have received *bonds* than to those which have only been aided with land grants.

In criticising the condition of these roads, regard should be had to the climatic conditions to which they are subjected. In the vicinity of the Missouri Valley, in Eastern Kansas and Nebraska, there is a good annual rainfall, distributed with more or less regularity over the entire year. This rainfall decreases in amount and regularity as we go west. On the high plains, at the foot of the Rocky Mountains, and throughout the desert, the annual precipitation is small in amount, and very irregular in occurrence. Throughout this whole region, what are locally called "cloud-bursts" are frequent, rendering necessary in many places large water-ways, where, in ordinary practice, small culverts would be sufficient. Over the lines of main drainage bridges are also required, although the streams are dry for a greater portion of the time. This is the region of high winds, and dry, drifting snows, rendering necessary the use of snow-fences and snow-sheds of sufficient strength to withstand the wind-pressure, tightly boarded up.

On the Sierras the snow is of a moister character, and accumulates in large masses on the mountain sides, to resist the weight and sliding pressure of which, a strong gallery, well anchored, is necessary. In the region west of the Sierras the rainfall is *mainly* confined to two months in the year, and the rivers are subject to heavy floods, making it essential to provide extraordinarily large water-ways, and extensively to rip-rap embankments.

In the region between the Missouri River and the Rocky Mountains the area of regular rains appears to be gradually extending westward, and the amount of rain gradually increasing. General Fremont, in exploring the country, found the sage-bush in the vicinity of Greenleaf (Central Branch Union Pacific Railroad), and near Carlyle (Kansas Pacific). During the recent trip over these roads none was seen on the Central Branch Union Pacific Railroad at Gaylord, 114 miles west of Greenleaf, and it was first seen on the line of the Kansas Pacific, 103 miles west of Carlyle. The Chief Signal-Officer of the War Department, in his annual report, 1878, notes the large increase of rainfall at North Platte station, on the Union Pacific Railroad. I am told that in Peru rain has fallen on the line of the railroad, where, previous to the construction of the road, none occurred. To illustrate the climate of the region through which the railroads under consideration pass, I have appended tables 1, 2, 3, 4, and 5, showing the elevations above sea-level, and the annual rainfall and mean temperature for two different years.

The temperature and rainfall are taken from the reports of the Chief Signal-Officer, and the elevations are chiefly from Mr. Gannett's compilation for Professor Hayden's survey.

In going to and coming from the west, the following-named lines, east of the Mississippi River, were passed over, giving an opportunity of comparing the condition of the subsidized roads with some of the important eastern lines:

The New York Central and Hudson River Railroad, a part of the Lake Shore and Michigan Southern Railway, the Wabash Railway, the Chicago, Burlington and Quincy Railroad, the Pittsburgh, Fort Wayne and Chicago Railway, and the Pennsylvania Railroad.

#### THE UNION PACIFIC RAILROAD.

This company owns a line from Council Bluffs, Iowa, to junction with the Central Pacific Railroad, 1,038.46 miles (Major Twining's remeasure-

ment), 5 miles of which are leased to the Central Pacific Company, making 1,033.46 miles from Council Bluffs to Ogden, Utah Territory, and 1,038.46 miles to Salt Lake City. The line is single track, and for about 500 miles, at its eastern end, it is in the valley of the Platte River and its tributaries, in an open, level land and prairie country, crossing but few streams requiring bridges. The maximum grades in this portion of the line are 20 feet per mile going west, over the peninsula between the Missouri and Platte Rivers, and 16 feet per mile in the Platte Valley; going east, 16 feet per mile from Cheyenne to Omaha, 516 miles, the line was originally built with maximum grades of 42 feet per mile in the Platte Valley, and 74 feet per mile over the peninsula. In the valley the grades going east are 20 feet per mile, and most of them occasioned by following closely the rolls of the river. Some of these short grades have been taken out since the road has been in operation. The maximum curve on this portion of the line is 6° and 75 per cent. of the distance is tangent.

Between Cheyenne and Laramie, 57 miles, the line passes through the southern end of the Black Hills, reaching at Sherman (according to the company's profile) an elevation of 8,242 feet above the level of the sea. The maximum grade going west, on this portion, is 80 feet per mile, and going east, 91.5 feet per mile. The maximum curve is 6°, and 75 per cent. of the distance is tangent. Between Laramie and Portland, 356 miles, the line is undulating, with maximum grades of 60 feet per mile going west, and of 64.5 feet per mile going east. The maximum curve is 6°, and 75 per cent. of the distance is tangent. Between Portland and Ogden, 104 miles, the line passes the Wasatch Range, with maximum grades of 62 feet per mile going west, and 91 feet per mile going east. The maximum curve is 6°, and 35 per cent. of the distance is tangent. The line has been changed and improved in places since it has been in operation, and there still remain places where improvements might be made in line, or grades, or both.

A great portion of the line is a low embankment, formed by throwing up earth from the sides, and in the bottom-lands and plains, it follows the undulations of the ground very closely. In crossing the Black Hills, and at several other points, some heavy work has been necessary. A large amount of work has been done raising the road out of shape in order to prevent snow blockades. In some cases it has been raised as much as six feet. I am not in possession of data as to the amount of this work done up to date, but am informed that 1,000 miles have been done on the Laramie division alone.

On the eastern division—Council Bluffs to North Platte—and embankments generally are of good width. West of North Platte over 50 per cent. of the embankments should be widened. In many places they are not wider than the length of the cross-ties. The high winds of the plains blow the tops of the embankment away in the form of drift in dry weather. This difficulty will be obviated to a great extent if the line is properly ballasted. Near the coal mines the company has widened a number of embankments with the refuse from the mines. The material which is not affected by the winds. Some of the cuts are very narrow. The tunnels are four in number, all short. Tunnel No. 1 has been partially arched during the past year with old rails laid longitudinally on ribs formed of old rails riveted together, these ribs supported on wrought-iron columns anchored into the sides of the tunnel. The company proposes to replace the timbering in tunnel No. 2 with concrete construction. Tunnels Nos. 3 and 4 are in rock sufficiently solid to require no arching. These tunnels are all excavated for a single

The masonry under the iron bridges is good, much of it having been rebuilt. Where old masonry has been retained, it has been repaired. The masonry in box and arched culverts is not, as a rule, first class. It is the original contract masonry put in when the road was built. A large number of these culverts has been removed by wash-outs, or otherwise, and pile bridges substituted.

For about 40 miles immediately west of Cheyenne the road is ballasted with the decomposed granite of the Black Hills. At several other points there are short stretches of gravel ballast. Generally, however, the road is maintained with earth thrown out of the ditches. In dry weather a good track can be kept up with this material, but it is very dusty and disagreeable to travelers and soon succumbs to wet weather.

For about 110 miles west of Omaha, the ties are nearly all oak; west of this, soft wood. The ties are of irregular lengths and not laid in line at either end. In general, there is a sufficient number in the track, and where this is not the case, it is under old iron, where renewals must soon be made. East of Sidney a good many ties need renewing. Elsewhere the ties are in fair condition, large renewals having been made. At the present time the company reports 460 miles of track laid with steel rail. At the close of 1878 there were 283 miles, showing that 177 miles have been relaid with steel during the present year. The weight of steel used is 56 pounds and 58 pounds per yard, chiefly the former. I think a heavier section would have been better in view of the increasing business and the heavy character of the rolling stock.

As an illustration of the general practice, in this respect, on the principal roads of the country, I have compiled the following table:

*Table showing weight of steel rails used by different companies.*

Name.	Wt per yard.	Name.	Wt per yard.	Name.	Wt per yard.
	Lbs.		Lbs.		Lbs.
Boston & Albany .....	63	Pennsylvania Railroad.....	67	Michigan Central .....	60
N. Y. Central & Hudson R.	65	Delaware, Lackawanna & W	60-68	Chicago, Burlington & Q.	66
N. Y. Lake Erie & Western.	63	Pgh., Ft. Wayne & Chicago	60	Chicago & N. Western ..	60
N. Y. N. Haven & Hartford	62	Pgh., Cin. & St. Louis.....	60	Chicago, Rk I'd & Pacific.	60
Lehigh & Susquehanna .....	60-62	Lake Shore & Mich. S.....	60	Chicago, Mil. & St. Paul..	56-60
Lehigh Valley .....	66	B. & O., Chicago div .....	64	Kansas Pacific .....	60
Philadelphia & Reading.....	68	Ohio & Mississippi.....	60	Central Pacific (standard).	60

There is a good deal of the original iron, laid when the road was built, still in the track, much of it laid with the old style of joint-chair. Between Cheyenne and Valley there is a large quantity of iron which needs immediate renewal, for a portion of which provision has been made. The present standard splice is what is known as the "Samson joint," with the addition of a wrought sleeve-chair laid directly under the joint. Some of the steel, and the rerolled iron has been laid with the plain double fish-splice, and, as above noted, there is a large number of old joint-chairs in use.

On that portion of the eastern division where old iron is still in use the spiking is deficient in places; elsewhere it is generally good. On this portion of the road, also, the line and surface of track are inferior. On the rest of the road the surface and line are, as a rule, good. There are,



however, a number of curves and some tangents which should up with an instrument, reference points set, and trackmen reline the track to them.

The sidings, outside of the "yards," are usually laid *wide* of track, and pass behind the station buildings. In some instances curves leading into the sidings could be lightened without decreasing standing-room, rendering it much easier for locomotives to get a heavy train. In some cases, also, at stations, by using three-four-rail switches, the number of switches in the main track decreased. The length of sidings now in use is 194.7 miles cast frogs, as fast as they wear out, are being replaced by frogs of steel rail. The switches are "stub," with upright lever switches and levers provided with targets. The switches are not lighted. Trains are required to "slow up" on approaching them. The road is provided, either with mile-posts, or danger-boards at road-corners. There is, in fact, small need for the latter, except in towns. Only a portion of the road is fenced, the company finding it more economical to pay for stock killed than to keep up the fences. In this region firewood is not found, and coal is dear, it is a difficult matter to get fences in repair! The company proposes using the barbed wire fence, iron posts, and a wooden rail on top, placed there to make the fence impenetrable to stock.

The telegraph line appears to be in good working order.

The company now has in use and in process of erection, some (17) iron bridges, nine (9) of them new this year. The new bridges are all wrought-iron structures. A number of trusses have been destroyed for renewal with iron next year. This will leave a few still to be provided for. The pile and trestle bridges are generally in good condition. A few need renewal, and some require ordinary repairs. A goodly number of the original openings have been filled up, and in other places new openings have been made as circumstances have required. Pile bridges are now maintained in many places where culverts have been used. This is, without doubt, at present a correct practice, both from a score of economy and safety. The bridge floors would be improved, and safety, in case of derailment, promoted, by timber guards on the side of the rails, securely fastened, and notched down, so as not to interfere with snow-plows.

The new terminal station at Council Bluffs is of brick. It affords office accommodations for station-officers, waiting-rooms, a baggage-room, and excellent, though limited, hotel accommodations. The passenger platforms should be covered with sheds, and ticket-windows provided for women. The building is well supplied with fire-hose and water. Under the same management with the depot is an emigrant hotel, where travelers of this class are provided with good, plain accommodations at low rates, and assistance is given in procuring tickets, checking baggage, &c.

The brick station at Omaha needs some repairs. The building is to be large enough for present purposes. The station buildings along the line are wooden structures (in many places a dwelling and office combined), and, so far as a somewhat hasty examination indicates, are generally in good repair. Hotels and eating-houses are provided at various points, and are sufficient in number for the trains now in present. The temporary buildings at Ogden should be removed, and an entire re-arrangement of station buildings and yard made, so as to properly accommodate the business of the several roads.

ing there. The general office building at Omaha is a plain, substantial, and commodious brick structure. The water stations are in ordinary good condition, no more than the usual amount of repairs being required. The new tanks are all of the "frost-proof" pattern, on cast-iron columns, set on stone foundations. The water supply is the "best the country affords," which in some places is neither ample nor good. Deficiencies are supplied by hauling water from well-supplied points. The windmills and steam-pumps are well maintained.

Coaling stations at principal points are provided with pockets and chutes for coaling locomotives.

The engine-houses and nearly all of the shop buildings are of brick or stone. Some additional shop-room has been provided in frame buildings. With the exception of ordinary repairs, the buildings are in good condition. The shops at Omaha are very much crowded. At other points the facilities are ample. The shop buildings are well supplied with fire-service. Turn-tables are of cast-iron, in masonry pits.

The snow-sheds were undergoing annual repairs at the time of inspection. Some of these structures are getting old, and when renewed, a more workmanlike-looking design is recommended. Snow-fences were also undergoing the annual preparation for winter.

The policing of the road is open to criticism. A good many of the ditches need clearing, and in general, the road-bed is not maintained to any definite shape or width, and weeds and grass are allowed to grow close up to the ends of the ties. At some of the principal stations the platforms and tracks are not kept clean, and the substitutes for water-closets are not properly attended to.

The rolling-stock is in good condition. The passenger equipment is provided with Westinghouse automatic brake and Miller platforms. The road is well supplied with machinery for maintenance of way purposes, such as pile-drivers, steam-plows and scrapers, and unloading machines, snow-plows, and track-flangers. Considerable ingenuity has been displayed in these labor-saving appliances.

In addition to exercising its proper functions, the company owns and operates coal mines at Carbon, Rock Springs, and Evanston, and a rolling-mill at Laramie capable of turning out 55 tons of iron per day with "one turn." This mill is now used for rolling iron for branch lines.

#### *Branch lines.*

A hasty examination was made of the Colorado Central Division, and of the Utah Central and a portion of the Utah Southern Railroads. These roads, while not subsidized, are important as feeders to the main line, and as such are of interest.

The Colorado Central consists of a standard gauge single-track line running from Colorado Junction, six miles west of Cheyenne, via Golden, to Denver, Colorado, and of a narrow-gauge single-track line running from Golden up the cañon of Clear Creek to Central City, with a branch to Georgetown.

Both lines are badly located in detail. On the narrow-gauge system grades are over 200' per mile, and the maximum curve unknown. Improvements are in progress on this part of the line, the alignment being revised and grades eased in places, iron replaced with 50-lb. steel, surface and line of track trued up, and some ballast put in. The narrow-gauge rolling-stock is in good condition. The line was originally stocked with six-wheel connected engines, without front trucks. They are now being supplied with pony trucks as fast as possible.

The buildings, while not elegant, are good enough for the business of this part of the road is exclusively with the tracts, and is good. Surveys have been made during the past year for extensions beyond Georgetown.

On the standard gauge line the road-bed is generally narrow and bridges need considerable repairs.

Road is laid with 56-lb. iron, with plain double fish joint, and ballasted. Ties are soft wood. Buildings are large enough for business, are in fair condition, and neatly kept. Rolling-stock in good condition. Passenger-cars have Westinghouse automatic old-style coupling.

The Utah Central and Utah Southern, as far as examined, operated at very low rates of speed, are built through a very dry and, although not in first-class condition, appear to be sufficiently maintained and equipped. The Utah Southern is rapidly being extended south. These lines form an outlet for the entire Salt Lake Valley of Ogden, and will undoubtedly be important feeders to the main line.

#### CENTRAL PACIFIC RAILROAD.

On the 30th June, 1879, this company owned main line and branches as follows, viz:

Junction Union Pacific to Sacramento.....	
Western Division and San José Branch .....	
Alameda Local.....	
Oakland Local.....	
Visalia Division .....	
Oregon Division .....	

#### And leased:

Union Pacific .....	
Southern Pacific .....	
Western Development Company .....	
Southern Pacific of Arizona .....	
Los Angeles and San Diego.....	
Los Angeles and Independence.....	
Sacramento and Placerville .....	
Stockton and Copperopolis.....	
Amador Branch.....	
Berkeley Branch .....	
Northern Railway .....	
California Pacific .....	
San Pablo and Tulare .....	

Total operated .....

Total length of side tracks June 30, 1879.....

Of which there were on lines owned .....

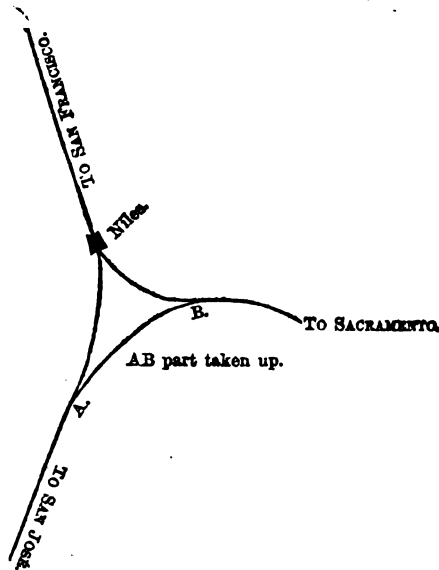
And on lines leased.....

Of the lines owned the following portions are subsidized: Central Pacific proper, W. P. Junction to San José, 860.66 miles, with lands, &c., and the Oregon Division (formerly California and Roseville to Redding, 152.22 miles, with lands, &c. Of the line of the Southern Pacific, 550.81 miles, is subsidized with lands, following description in connection with the accompanying map showing the growth of the Central Pacific's system in the vicinity of San Francisco.



The line from the junction with the Union Pacific was opened to the public May 29, 1869. The Western Pacific Railroad was consolidated with the Central Pacific June 23, 1870. On September 1, 1869, the Central Pacific leased 5.64 miles from Sacramento to the junction with the Western Pacific at Brighton, from the Sacramento and Placerville Railroad Company, and the line was opened to San José September 15, 1869. The San Francisco Bay Railroad Company was chartered July 25, 1868; was consolidated with the Western Pacific Railroad Company November 2, 1869, and opened the line from Niles to San Francisco about December 1, 1869.

By leasing the line of the Sacramento and Placerville from Sacramento to Brighton, and running trains via that route, that portion of the Western Pacific subsidized line between the American River junction and Brighton, about three miles, was abandoned as main track, and has since been only used for storing cars. On the opening of the road from Niles to San Francisco it at once became a part of the main line, and that portion of the subsidized route from Niles to San José was henceforth used only as a branch road. As a consequence of this arrangement, a portion of the subsidized line forming the third side of the triangle at Niles was abandoned and the track subsequently taken up. (See sketch.)



On June 30, 1874, five miles were leased from the Union Pacific Railroad Company from Ogden to the Junction; the Northern Railway was leased July 1, 1876, and upon the completion and lease of the San Pablo and Tulare Railroad, November 8, 1878, the present main line was established, viz:

	Miles.
Ogden to Junction, Union Pacific Railroad.....	5.0
Junction to Sacramento, Central Pacific Railroad (Major Twining's remeasurement) .....	738.45
Sacramento to Brighton, Sacramento and Placerville Railroad.....	5.64
Brighton to Tracy, Central Pacific Railroad.....	62.30
Tracy to Martinez, San Pablo and Tulare Railroad.....	47.61
Martinez to West Oakland, Northern Railway.....	29.75
West Oakland to Oakland Wharf, Central Pacific Railroad.....	2.20
Oakland Wharf to San Francisco, Central Pacific Ferry .....	3.69
<b>Total, Ogden to San Francisco.....</b>	<b>894.64</b>

This route is about eleven miles longer than that via Niles, the heavy grades near Livermore.

More recently the Northern Railway has been built from E (the strait opposite Carquinez) to Fairfield, on the California Pacific (July 1, 1876), and is now nearly ready for use. When this line accompanying ferry, is completed, the through business will over to it, and the main line will then be—

Ogden to Sacramento .....	
Sacramento to Fairfield, California Pacific Railroad .....	
Fairfield to West Oakland, including ferry at Benicia .....	
West Oakland to San Francisco, including ferry .....	

This arrangement, while decreasing the length of the through line, reduces all that part of the subsidized line west of Sacramento to the condition of a branch road.

#### *Condition of line between Ogden and San José.*

The line is laid with maximum grade of 116.2 feet per mile going east, and 105.6 feet per mile going west, both on the Sierras. Between the Sierras the maximum grade is 75 feet per mile going east, and 65 feet per mile going west. The maximum curve is 10°; road is single track. As a consequence of the extreme haste in which the road was built, also of allowing economy of first cost to override all other considerations, it is in places improperly located, and has grades badly adjusted. In a few places the line has been changed since the road has been opened. A few of the cuts need widening, but generally they are of sufficient width. Embankments here and there need widening. This work, however, is being gradually accomplished.

The tunnels are seventeen (17) in number, with an aggregate length of 8,102 feet. Of these, one (1) is lined for 529 feet of its length with rubble masonry, and ten (10) are lined, some partly and some wholly, with timber to an aggregate length of 3,468 feet. This timber should be replaced with masonry. The tunnels are all except one on single track.

Where masonry is used under bridges it is generally of good quality. In a few places it needs rebuilding. Nearly 50 per cent. of the track is ballasted. A little decomposed granite is used, but the ballast is gravel, usually well selected and clean.

Where ballast has been put in, the road-bed is well trimmed and maintained, presenting a neat and workmanlike appearance.

Cross-ties are of red pine on eastern end of road, and of redwood on the west end. Renewals are all made with ties sawed to equal length and "spotted," and laid in track with ends in line. The renewals are well kept up. The "life" of ties is much longer on the Sierras than under ordinary circumstances.

Renewals of rails are now all made with steel. The standard weight is 50 pounds per yard, with double-fish (one plain and one angle) section, with opposite joints, suspended. There has been some steel rails of light as 50 pounds per yard. Some of the iron put down when the road was built, laid with joint chairs, is still in use. It has worn reasonably well, but is now nearly worn-out. The surface of the track is generally good, often excellent. Where old chair iron is in use the surface is so good as elsewhere. The track is in excellent line, great care has been taken to have all curves and tangents true, such reference points

necessary to this end being established with instruments, and trackmen required to line the track to them.

The majority of the switches are "stub," with upright cast-iron switch stands rigged with targets. Quite a number of Wharton switches have been put in use during the present year, and are giving entire satisfaction. Switches are not lighted. Trains are required to "slow up" on approaching them. Cast frogs are being replaced with steel rail frogs as fast as worn out. The policing of the road is excellent; all old material and rubbish about station and shop buildings is promptly removed, and material for use, piled up. The road-bed, as a rule, is well trimmed up, and most of the ditches kept clean, and a considerable portion of the "right of way" cleared up.

The road is not supplied with mile-posts, or danger-boards at road-crossings. On a considerable part of the line the latter are not needed. The line is fenced by the company where circumstances require it. The bridges are Howe truss, straining beam truss, pile and trestle, and a few wooden girders on masonry. The truss bridges are covered, most of the large ones with galvanized iron. These bridges, with few exceptions, were put up when the road was built. The time is very soon coming when renewals must be made. This should be done with wrought-iron trusses on permanent substructures. In one or two places, stone arches might be better. The temporary trestle approaches to the large bridges on the mountain should be done away with, suitable masonry built, and embankments filled in. The pile and trestle bridges are generally in good condition, as regards quality of material. In some cases repairs and renewals should immediately be made, and section of girders increased. The safety of the bridges would be increased by placing the ties closer together, and putting guard timbers on, notched down, and properly fastened, so as not to interfere with snow plows. The station buildings are nearly all temporary frame structures, most of them erected when the road was built. They are kept in tolerably good repair. At Ogden, the buildings are partly owned by this company, and partly by the Union Pacific Company. As suggested in report on the Union Pacific, this whole yard should be remodeled. At Sacramento, the company is putting up a new passenger station. This is a frame building with a roof spanning the platform and tracks, and will supply a much needed convenience at this point. The company furnishes dwelling-houses to section foremen. The standard style of section-house, as now built, is a neat, though inexpensive dwelling. The water-supply is meager and of bad quality on a large part of the company's line. This is one of the greatest difficulties with which they have to contend. Water-tanks are of various sizes, usually enclosed in temporary buildings. Water "cranes" could be established in several places to advantage, obviating the necessity of extra stops for the purpose of taking water. Pumping machinery is good. The road is well supplied with wood and coal stations. Coal chutes with pockets, or small cars with over-head drops, would be a great improvement at the principal coaling stations.

There are frame engine-houses at Ogden, Promontory, Terrace, Toano, Wells, Carlin, Winnemucca, Hot Springs, Wadsworth, Truckee, Ellis, and Niles, with stalls varying from 1 to 20 in number. The one at Terrace is partly roofed with corrugated iron; those at Winnemucca, Carlin, and Wells, are entirely roofed with corrugated iron, and those at Winnemucca and Carlin have stone foundations and masonry pits. The engine-house at Rocklin is partially built of stone, has 18 stalls, and is roofed with corrugated iron. Engine-house at Sacramento has 29 stalls, is built of brick, and has corrugated iron roof. The old wooden turn-



tables are being replaced with cast-iron ones, with masonry piers are frame shops for ordinary running repairs at Terrace, Ogdensburg, and Wadsworth. The principal shops of the company are at San Francisco. They are well laid out, amply supplied with machinery, apparatus, and administered, and sufficient for all ordinary demands upon them.

The machine, smith, paint and carshops are of brick, with roofs of corrugated iron. The foundry, wheel-foundry and boiler shop are of frame, the first roofed and sided with corrugated iron, and the others sided with boards, and roofed with corrugated iron. The shops are supplied with fire service. For about 40 miles across the Sierra Nevada Range the line is covered with snow galleries; they are constructed of timber, and, where necessary, anchored to substantial masonry. They are beginning to need considerable repairs, and will soon require a new one. In view of the constant danger from fire, it is probable that an iron structure would be more efficient and economical in the future. For protection against fire, three water-trains are constantly running in the galleries, and a fire-alarm telegraph is in operation and distributed boxes established, through which watchmen are required to call each round, and can also report casualties, such as fire, shed derails, &c., and can call for wreck-car or other assistance, as may be required. A telephone line is also in operation, with stations at points between telegraph offices. The rolling-stock is in good condition. The passenger stock is equipped with Westinghouse air-brake and Miller plan. A commendable feature of the emigrant service is the introduction of berth racks in emigrant cars, allowing travelers in them better opportunity for rest, and enabling the company to carry more passengers per car than would otherwise be the case. The road is well supplied with snow-plows and ice-flangers in good condition.

Wood is used for fuel for locomotives on the mountain; coal is used at the coast. The company owns and operates coal mines at Evanston, Utah, and Union Pacific Railroad, 76 miles from Ogden.

#### NILES TO SAN FRANCISCO.

The line from Niles to Oakland is in good condition. It is laid with steel rails, and is ballasted with gravel. The station buildings are small, but in good repair.

The ferry between Oakland Wharf and San Francisco is operated by boats that are first class in appointments and neatness. The buildings are well built. The passenger rooms, both at Oakland Wharf and San Francisco, are very inferior.

The company is now filling in a portion of the Oakland pier to make the work more permanent. When this is completed the arrangement of the slips will be changed. At Oakland there is a frame engine-house with 21 stalls, and temporary shops for ordinary running repairs. The pier here is to be remodeled in connection with the wharf. The company possesses of an extensive property at this place, sufficient for the future and improvements for some time to come. They also have in San Francisco an extensive office-building, and also own, conjointly with the Southern Pacific Company, what is called the Mission Bay tract. This property consists of the whole or part of 38 city squares of San Francisco, donated by the State of California to these two road companies for terminal purposes. It contains about 60 acres exclusive of streets (which have not as yet been vacated). The portion of the tract has yet to be reclaimed from the bay. A considerable portion have been filled in, wharves built, some tracks laid, and two temporary warehouses erected.

## CALIFORNIA AND OREGON RAILROAD, NOW OREGON DIVISION.

This road was consolidated with the Central Pacific Railroad June 30, 1865.

It is subsidized with land grant, and consists of a single-track line extending from Roseville Junction, 18.2 miles east of Sacramento, to Redding, California, 151.17 miles, being for the whole distance in the Sacramento Valley. The maximum grade is 52.8 feet per mile, and maximum curve 3°. It has a small amount of steel rail, but is chiefly laid with iron, much of it with joint chairs. Perhaps twenty per cent. of it is ballasted with gravel. Ties are of soft wood; switches are "stub," of same pattern as is used on main line. There are over four hundred openings on the line, spanned with Howe and straining beam trusses, and pile and trestle bridges. The bridges are all on wooden substructures, and the trusses nearly all covered. Some repairs are needed. Station-buildings and section-houses are similar to those on main line.

There is a temporary engine-house at Red Bluff with three stalls and wooden turntable. The road is fenced. The track is in fair condition and the road generally, up to ordinary requirements for a branch line.

*Oakland to Tracy, via Northern Railway, and San Pablo and Tulare Railroad.*

The line was opened to Martinez July 9, 1878, and to Tracy September 8, 1878.

It follows the bay and river to Antioch, and thence crosses the low lands to Tracy, on the subsidized line, thus avoiding the Livermore hill, but increasing the distance over the Niles route about 11 miles. With the exception of some heavy work near Pinole and Tormey, the graduation is light. The cuts and embankments are nearly all of good width. There are two (2) tunnels, both of them excavated for double track, and both short. No. 1 is through solid rock, and No. 2 is timbered. A small portion of the line is through what is termed "tule" land. This land has a surface stratum of soil, of greater or less thickness, with a substratum of soft mud. Owing to injudicious construction, much trouble has been experienced where the line crosses any of this formation. The road is laid with 50-lb. steel with double fish-splice, put down with joints opposite and supported, and is ballasted with gravel. Ties are redwood. Line and surface of track, good for a new road. Switches are "stub," same as on subsidized line. Line is fenced, but has neither mile-posts, nor danger-boards at road-crossings.

The bridges are all pile, except one small Howe truss draw at Martinez. Station buildings are better in design, and of a more permanent character than those on the line between Ogden and San José. There is a small engine-house, with one stall, at Antioch. The line is well supplied with water-tanks, and the pumping machinery is good.

At Carquinez is located the new slip which is to form part of the ferry service on the new route via Benicia. It is, to all appearances, an excellent structure of the kind.

NEW LINE FROM SACRAMENTO TO CARQUINEZ, VIA CALIFORNIA PACIFIC RAILROAD AND NORTHERN RAILWAY TO BENICIA, AND FERRY TO CARQUINEZ.

The California Pacific, from Sacramento to Fairfield Junction, lies for the whole distance in the low-lands of the Sacramento River. It is subject to heavy floods from the river, and a large amount of work has been

done, raising the grade, rip-rapping embankments, and providing necessary water-ways. During the past year it has been ballasted with gravel, and the widening of the banks partially accomplished. A portion is laid with 50-lb. steel, but the greater part is old iron joint chairs. The road is evidently improving, but will require considerable expenditure before it will be fitted for a heavy traffic. The bridge over the Sacramento is new. It is a Howe truss, with a draw span, and is used both for trains and wagons. The major portion of other bridges are pile structures. The buildings are in fair condition. The line from Fairfield Junction to Benicia, via the Northern Pacific, is new and is not yet opened for use. It is laid with 50-lb. steel and redwood ties, and gravel ballast. The "tule" land has also given trouble here. The slip at Benicia is similar to the one on the opposite side of the strait at Carquinez. The boat which is to serve the ferry is under construction at Oakland, and is designed to transport freight-cars at one trip.

#### KANSAS PACIFIC RAILWAY.

This company operates 771.8 miles of single-track line as follows:

Main Line, State Line Kansas City, to Denver.....	.....
Leavenworth Branch.....	.....
Fairfield Junction City and Fort Kearney Railroad.....	.....
Salina and Southwestern Railroad.....	.....
Solomon Railroad.....	.....

Total operated.....

Of this mileage, 393.2425 miles of the main line, west from Kansas City, are subsidized with bonds, right of way, lands, and materials.

The line was originally located with maximum grades of 75 feet per mile going west, and 87.2 feet per mile going east, and maximum curves of 7° 40'. There were many serious errors of location, a number of which have been rectified by changes of line since the road has been in operation. The company proposes continuing these changes as circumstances permit. When completed, they will materially lessen the cost of operation. In general, the road follows the surface of the country very closely, there being comparatively few points where heavy grading has been done. The cuts and embankments in numerous places are being widened. The larger portion of the road-bed, however, is of good material and much of it good.

There are no tunnels on the line. A large part of the masonry bridges has been rebuilt and is good. Some of the smaller bridges with small openings needs attention.

But a very small portion of the road is ballasted. Short portions of the Kaw Valley division have been ballasted with broken stone, gravel, and cinders. On the Kaw Valley division there is quite a large quantity of ballast already delivered alongside the track.

The cross-ties on the eastern end of the road are of oak; on the western end, pine. Large renewals have been made during the year. A large number to the mile has been used. The ties are of irregular length and are not laid with either end lined. Renewals of rails are made, partly with rerolled iron, and partly with 60-lb. steel. 52-lb. steel has been used. New rails are laid with double flange with opposite joints, supported. There is a large amount of material put down when the road was built—laid on joint chairs—still in place. Probably 50 per cent. of the track is on fair line and surface, and



of this can be classed as good. In addition to this, much of the *old iron* track is well lined up. At the end of the season, when renewals for the year are all completed, the showing will doubtless be much better. The switches are "stub," with upright lever, or revolving stands, rigged with targets. The revolving pattern is now standard. The switches are not lighted. Standard frogs are made of steel rail. The miles are marked on the telegraph poles. The snow-fences were undergoing general annual repairs at the time of inspection. The telegraph line is in good condition. As fast as worn out the truss bridges are being replaced with wrought-iron structures. The bridge over the Kaw River at Kansas City is owned jointly with the Missouri Pacific Railroad Company. It is a combination Pratt truss, through, single-track bridge, having three spans of 180 feet each, with first-class masonry built for double track. The company has now in progress a general overhauling and renewal of pile and trestle bridges. A large part of this work is already accomplished, and at the end of the present season these structures will be in commendable condition. Many old openings have been filled up and some new ones made. The total number of openings has, however, been considerably reduced. The bridge floors are provided with guard timbers both inside and outside of the rails.

Station service at Kansas City is furnished by the Union Depot Company. The stations at Grantville, Bavaria, Wilson's, Russell, Victoria, and Ellis are stone. The two latter are two-story buildings. The new stone stations, as now put up by this company, are very neat and substantial buildings. At Wakeeny, Abilene, and Topeka the stations are chiefly owned by private parties. With few exceptions the frame station buildings are in good repair, requiring no more than ordinary repairs, and are sufficient for present purposes. At Denver a union depot is much needed, and I believe that preliminary steps to this end have been recently taken. Section-houses are furnished to track foremen at various places. Nearly all of the water-tanks are in good condition. The pattern now used, in all renewals, is the "frost proof." Those recently put up are set on wrought-iron columns, made of old rails, with masonry foundations under. The new tanks for ordinary service contain 45,000 gallons each. The pumping machinery, both wind and steam, is in good condition. On the western portion of the road, the water-supply is somewhat limited and of inferior quality. At Armstrong, near Kansas City, there is an engine-house with ten stalls of brick and eight stalls of frame building. The shops at this point are the principal shops on the line. They are well arranged, are apparently sufficient for present demands, and are in good condition. They are frame buildings. There are small frame engine-houses at Lawrence and Topeka, each with two stalls, and one at Hugo with six stalls. There is a stone engine-house at Wamego with eight stalls, one at Brookville with ten, and one at Ellis with eight, (and a frame addition of four,) and one at Wallace with ten stalls. There is a small frame carpenter and smith shop at Wamego and a frame machine-shop at Ellis. Wrought-iron turntables are being put in in place of wooden ones. At Denver the engine-house and shops are partly owned by this company, and partly by the Denver Pacific Railroad and Telegraph Company. The engine-house has four stalls of brick, in bad condition, and six stalls of wood, very temporary. There is a stone machine-shop, and frame tin, wood, smith, and paint shops. These shops should be rebuilt on a better plan and the yard rearranged. The shops are all well supplied with fire service. The policing is tolerably well done. The station and shop buildings are, as a rule, neatly kept, a large portion of the ditches kept clear, and the road-bed, for a portion of the line, trimmed up.

The rolling-stock is in good condition. Nearly all of the locomotives have been recently overhauled and repaired. The passenger cars are equipped with Miller platforms and Westinghouse automatic brakes.

Fuel used, is coal from Kansas and Colorado mines. No extra work on the branch lines was made.

#### DENVER PACIFIC RAILWAY.

This road was put into the hands of receivers April 2, 1878, at which time of inspection was operated by one of them. Recently, however, it has been removed from his jurisdiction, and is now operated in connection with the Kansas Pacific. It has a land grant direct to the United States. The road consists of a single-track line extending from Denver, Col., to Cheyenne, Wyo., 105.89 miles. The maximum grade is 90 feet per mile. Between Denver and the 90th mile the grade is very light. Between the 90th mile and Cheyenne it is somewhat heavy. The embankments need widening. For a considerable portion of its length the natural material of which the road-bed is composed is somewhat gravelly, making a good foundation for a road with heavy traffic. The cross-ties are of soft wood and need extensive repairs. They are of irregular lengths and not laid in line. The rails are of pound iron, laid with plain double fish-splice and opposite joints. A portion of the iron, laid when the road was built, has been renewed with rerolled iron. Where the iron has been renewed the track is in fair line and surface. Elsewhere, inferior. The ties are "stub," with upright stands and targets. Frogs are cast on the ties.

The bridges are all pile or trestle. They should have more stringers on them, and be provided with guard timbers.

In Denver, the company has a frame station, a brick warehouse, a brick office and station near the head of the yard. At Cheyenne, a good brick warehouse, and a frame passenger station. The buildings between Cheyenne and Denver are frame, and need extensive repairs. The platforms generally need renewing. The water works are not in first-rate condition, the pumping machinery, especially the engine, in need of renewal. The shops at Denver are owned and used jointly with the Kansas Pacific, and have been noticed in the report on that road.

Four out of the six locomotives owned by the company have been received general repairs and are now in good condition. The passenger and passenger equipment needs considerable repairs. Passenger cars are supplied with Westinghouse air-brake.

This company operates the Denver and Boulder Valley Railway under lease.

#### CENTRAL BRANCH UNION PACIFIC RAILROAD.

This road is subsidized with bonds, lands, depot grounds, and materials, and is a single-track line, extending from Atchison to Waterville, Kans., 100 miles. The company also operates, through leases, a branch line, 158 miles of single line west of Waterville.

The line is laid with maximum grades of 63  $\frac{1}{4}$  feet per mile going west, and 66 feet per mile going east. The maximum curve is 70 per cent. of the line is tangent. On the first 20 miles some heavy work has been encountered, but on the rest of the road the work is light. A good many of the embankments and some of the bridges need widening, and the ditches should be opened.

The bridge masonry is good.

But a very small portion of the road is ballasted, the track being maintained with earth. The ties are in fair condition, and are of irregular lengths, not lined at either end. Renewals are made with oak. The surface of track is inferior; line fair. The first 20 miles were originally laid with 50-pound iron, and the remaining 80 miles with 56-pound iron. Much of this original iron is still in use, but a small portion of it having been renewed, and that with rerolled iron. The fastenings are double fish-splices and old joint-chairs. Track is laid with opposite joints, supported. The switches are "stub," with upright switch stands, and targets, and are not lighted. The telegraph line is in good repair. The Howe truss bridges need strengthening. Some of the girder bridges have had additional girders put in, and this should be done on the remainder.

The station buildings are in good condition. The one at Atchison is a two-story frame building, and contains the general offices of the company, in addition to the passenger station and ware-house. The station building at Muscotah is of stone, the rest are frame.

The water-stations are all "frost-proof" tanks, and are in fair condition. The pumping machinery, both wind and steam, is good. There is a stone engine-house at Atchison with six old and seven new stalls, and wooden turntable, and also a stone machine-shop and a frame paint-shop, all good. Of the 26 locomotives, all are new except six, and some of these have recently had general repairs. The passenger and freight equipment is good, much of the latter being new. The passenger stock is supplied with Westinghouse automatic brake. Considering the difficulties with which this company has had to contend, and that for several years previous to the present one, the earnings of the road have been insufficient to pay fixed charges, the road is in as good condition as could be expected. The leased lines are all prairie roads, laid across an undulating country, with maximum grades of  $67\frac{1}{2}$  feet per mile and a maximum curve of  $4^{\circ}$ . The graduation is generally light, and formation level, of fair width. The bridges are pile, trestle, and combination trusses, and a few wooden girders on masonry. The large trusses are on iron-tube foundations. They are partially ballasted with gravel. The rails are 56-pound iron, with double plain fish-splices, laid with opposite joints, supported, on oak ties. The track is in good surface and in fair line.

The stations are small, but sufficient for the demands upon them. The water-stations are in good condition. There is a three-stall frame engine-house at Washington, and a new one at Greenleaf of six stalls. The turntables are wood. The leased lines all run through a fine farming country, which is rapidly filling up with settlers. They have all been opened for travel since 1876, and, consequently, have been built with labor and material at low rates.

#### SIOUX CITY AND PACIFIC RAILROAD.

	Miles.
This company owns a single-track main line from Sioux City, Iowa, to Fremont, Nebr.....	101.2
And a branch from California Junction to Missouri Valley.....	5.84
Total .....	107.04
And operates, under lease, the Fremont, Elkhorn and Missouri Valley Railroad.....	51.09
Making a total operated of.....	158.13

The road has been subsidized with bonds, lands, depot grounds, and materials, from Sioux City to Fremont, 101.77 miles, which includes the



crossing of the Missouri River, which is operated by means of The act of Congress provides that the subsidized roads shall be completed in sections of 20 consecutive miles, before bonds shall be There is room for doubt whether the section including this ferry-can properly be considered as "consecutive," although it was as such by the examining commissioners. Without doubt, a across the Missouri River was contemplated as a necessary part branch of the Pacific Railroad system to Sioux City. At the road was under construction estimates were submitted by the company of the probable cost of the road, *including the cost of the* and a ferry suggested as a *temporary expedient*. Owing to the character of the river, it is often necessary to change the landing ferry on either shore, and at any time its operation may be interrupted by some change in the stream. It is very doubtful, however, whether the business of the company, either present or prospective, justify the construction of a bridge, and also whether the probable recovery to the government, of any portion of the subsidy would be increased thereby.

The main line is laid with maximum grades, both east and west, of 10 feet per mile. The maximum curve is 5° 25', and 91 per cent of the line is tangent. In Iowa, with the exception of about one-third of a mile near Sargent's Bluff, the graduation is light, the line runs on its whole length in the Missouri bottoms, and for nearly the whole distance it is a low embankment. In Nebraska, the road crosses the waters of some small streams, and there are several points where heavy work has been encountered. In a few places the road-bed has to be widened, but generally it is of fair width. There is no masonry on the line. The road is not ballasted. The cross-ties are oak and cedar; all renewals, except on curves, being made without cutters. A good many new ties are needed. Except for about eight miles where iron has been renewed, the original iron is still in use. This is beginning to wear out, and in a very few years will all require renewal. Iron is 56 pounds per yard, with plain double fish-spikes.

The line and surface of track in Iowa is fair; in Nebraska, the switches are "stub," with upright switch-stands and targets are of various patterns, chiefly cast. The road has 13.1 miles of track. Nearly all fences are kept up by the land-owners. There are mile-posts, and danger-boards at crossings.

The bridges consist of one Howe truss, 160 feet span, two covered Pratt trusses, one of 160 feet, and one of 180 feet span, and 125 trestle bridges. The Howe bridge needs immediate renewal. The combination bridges are new and in good condition. A few of the trestle bridges need rebuilding, the remainder are in good repair. The bridge floors are laid without guards.

The station buildings need some painting and minor repairs to keep them in good shape. The company has a brick engine-house with stalls at Blair, one at Sioux City, with six stalls, and an engine-house, a machine-shop, and a car-shop at Missouri Valley.

Plain frame dwellings are provided for track foremen. Timbers permit an examination of the rolling-stock. It appears to be in good condition. The passenger equipment east of the river has been replaced by house automatic brake and Miller platforms.

#### SOUTHERN PACIFIC RAILROAD (NORTHERN DIVISION)

This is that portion of the Southern Pacific Railroad Company not leased to the Central Pacific. It consists of a single-track

from San Francisco to Carnadero, with branches to Trés Pinos and Soledad. That part of the line between San José and Trés Pinos has a land-grant. A hasty examination of the portion of this road between Pajaro and San Francisco was made. The line is laid with 50-pound steel between San Francisco and San José and 56-pound iron elsewhere. The track is in fair line and surface. Between San Francisco and San José the line is ballasted with gravel, and beyond this point has gravel back-filling. Ties are redwood. Switches are "stub," with upright switch-stands and targets, and are not lighted. The bridges are Howe and straining-beam trusses, and pile and trestle, and appear to be in good repair. Station and other buildings are in good condition. The road is well fenced, and provided with mile-posts and road-crossing boards. The ditches need clearing, and the trimming up of road-bed and details of maintenance of way might be improved.

#### BURLINGTON AND MISSOURI RIVER RAILROAD IN NEBRASKA.

This company owns—

Main line, Plattsmouth to Kearney Junction.....	190.5
and leases—	
Omaha and Southwestern Railroad.....	46.6
Nebraska Railway and branches.....	136.5
Republican Valley Railroad.....	69.4
Total leased.....	252.5
Total owned and operated.....	443.0

A hasty examination of that portion of the road between Omaha and Hastings was made.

The excavations and embankments are generally of good width; a few points only need widening. The ditches in cuts need opening. The maximum grade is 30 feet per mile, and maximum curve 3°. The masonry is of all grades. The road is not ballasted. The cross-ties are of oak, and are of irregular lengths. There are about 30 miles of track laid with steel rails, with double fish-splices, joints supported, and opposite. The rest of the road is laid with iron rails (about 70 miles of it 49 pounds per yard) and needs pretty large renewals. The surface of track is medium. Many of the curves and some tangents need to be trued up. The switches are nearly all the old-style "point," with upright switch-stands with targets, and rail-frogs. The bridges are Howe truss, trestle and pile, and have floors well laid, and provided with guard-timbers. The line is partly fenced. There are no mile-posts.

The passenger station at Omaha is a very handsome structure of brick, with neat accommodations for passengers, and covered platforms. The other stations appear to be in good condition, and sufficient for present demands. Want of time prevented an examination of shops, engine-houses, &c., or any detailed examination of rolling-stock. The latter appears to be in good repair. The passenger equipment is furnished with Westinghouse air-brake and Miller platforms.

#### CHICAGO, BURLINGTON AND QUINCY (IOWA DIVISION).

This line extends from the Missouri River to Burlington, 279 miles, and was formerly the Burlington and Missouri River Railroad. It received a grant of land from the State of Iowa, given to the State by the general government for this purpose. A hasty examination only was

made. The line, for the whole distance, is across the drainage, originally laid with maximum grades of 69 feet to the mile, east and west. The maximum curve is  $4\frac{1}{2}^\circ$ . The original location was the maximum grade having been used in places where a lighter grade would have been no more expensive. The company has made it still making, changes of line, reducing the grade to a maximum of 30 feet per mile, and operating the old and new lines as double track, the old one for the *down* line.

There is a good deal of heavy work on the line. The cuts are all of good width, but, in many places, need to have the ditches and the slopes trimmed up. Some of the embankments need widening. The company is replacing trestle bridges with box and arched bridges and wooden trusses with wrought-iron, as fast as they need them. About 50 % of the line is ballasted with broken stone, gravel, or cinders. The cross-ties are of oak, of irregular lengths, and are generally spaced at 18 inches. There are about 230 miles of track laid with steel rails. The section is 66 pounds per yard, with double angle fish-plates, 12 inches opposite joints, suspended. The track is in fair surface, and on the whole end good. The curves in some places need truing up. The signals are old style "points," with upright revolving switch-stands, and are lighted. Semaphore signals are used at dangerous points, and are operated by watchmen, and are lighted at night. The road is fenced by the company for nearly its whole length, and is provided with mile-posts and road-crossing boards. No special examination of the buildings was made. The station-buildings appear to be in fair condition. The company has a brick engine-house with 40 stalls, and brick shops at Ottumwa, and a brick engine-house with 30 stalls at Ottumwa.

The rolling-stock is in good order. Passenger equipment has a hand-in-house automatic brake and Miller platforms.

#### SAINT JOSEPH AND WESTERN RAILROAD.

Only a hasty examination of this road was made. It extends from the Missouri River at Saint Joseph, to Hastings in Nebraska, 226 miles. A land-grant was obtained through the medium of the State of Missouri. A good many of the cuts and embankments need widening, and a great amount of ditching should be done.

There are short stretches of stone ballast in numerous cuts. The track is generally well broken, but is badly drained.

Cross-ties are of oak, of very irregular lengths, and many are second class. Large renewals are needed. Extensive renewal of rails are also needed. The rails are laid "hap-hazard," partly with fish-bolts and partly with joint chairs. Line and surface of track inferior. Curves generally need rectifying. The switches are "stub," with no switch-stands and targets, and are not lighted. Rail-frogs are not used. Road is furnished with mile-posts and road-crossing boards.

The bridges are Howe truss, trestle, and pile. A few bridges are masonry. The station buildings are frame, and are in need of repair, but many of them need painting.

The line is tolerably well supplied with water-stations. The motive power is partly done by horse and partly by wind power. The wind motive power is good. No examination of engine-houses, machine-shops, or car-shops was made, for want of time.

#### THE HANNIBAL AND SAINT JOSEPH RAILROAD.

This road received a land-grant through the medium of the State of Missouri. A hasty examination was made of the main line—Hannibal to



Saint Joseph, 206 miles. The road runs in a very direct line across the State of Missouri, over a rolling country, and most of the way through a good farming region. The road is laid very close to the surface, following the rolls, and making a series of summits and depressions, with steep grades. The maximum grade is 80 feet per mile, and maximum curve 4°. The embankments are generally narrow, the cuts of fair width but need ditching. The bridge masonry is in fair condition.

A portion of the road is ballasted with gravel and a little with broken stone. The ties are of oak, of irregular lengths, and not laid in line. At the close of 1878, the company had 128.9 miles of steel track in use, and has laid some more during the present year. The steel is 52 and 56 pounds per yard, laid with angle bar fish-splices. That portion of the road laid with steel is in good line and surface. The line is well fenced.

The bridges are Howe truss, pile and trestle. Some of the bridges need strengthening, and some should be renewed.

The station buildings and water-stations appear to be in fair condition. The main shops of the company are at Hannibal. They are not large, but are capable of turning out a good deal of work, and are, apparently, of sufficient capacity for all present demands.

Of the 78 locomotives, six are new, and about 70 per cent. of the old ones have recently undergone general repairs. Extensive repairs have also been made on the passenger and freight equipment, during the last eighteen months, and it is now in fair condition.

These lines, embracing as they do roads of all classes, operated under such various conditions of climate and material prosperity, should be judged each according to its circumstances. The returning tide of prosperity will doubtless bring an increased business to all, but more especially to the great lines. It is important, therefore, that these should be equipped with all the appliances for safety and comfort known to modern practice.

The introduction of these, a more thorough policing, and a closer attention to the details of maintenance and operating, each as it may be required, cannot be too strongly urged.

I desire to acknowledge the uniform courtesy of the officers of the different roads while making these examinations.

Respectfully,

A. B. NICHOLS,  
*Railroad Engineer.*

Hon. THEOS. FRENCH,  
*Auditor R. R. Accounts,  
Department of the Interior.*

1.—Table showing elevation above level of the sea of various points.

Stations.	Above level of sea, in feet.	Stations.	Above level of sea, in feet.
New York, N. Y. ....	0	Denver, Colo. ....	5,197
Cincinnati, Ohio (about) .	540	Salt Lake City, Utah. ....	4,261
Chicago, Ill. ....	589	Winnemucca, Nev. ....	4,332
Leavenworth, Kans. ....	783	Sacramento, Cal. ....	30
Omaha, Nebr. ....	1,003	Red Bluff, Cal. ....	308
North Platte, Nebr. ....	2,825	San Francisco, Cal. ....	0
Cheyenne, Wyo. ....	6,075		

2.—Table showing rainfall for year ending September 30, 1873.

Station.	1872.			1873.							
	October.	November.	December.	January.	February.	March.	April.	May.	June.	July.	August.
New York, N. Y. . . . .	In. 3.43	In. 5.04	In. 2.54	In. 5.06	In. 1.73	In. 1.88	In. 3.05	In. 4.08	In. 1.29	In. 4.15	In. 7.69
Cincinnati, Ohio. . . . .	3.33	1.12	2.43	2.66	3.76	12.36	12.89	3.50	3.58	3.94	4.69
Chicago, Ill. . . . .	0.65	1.06	0.19	2.56	0.47	0.89	6.12	7.20	1.44	4.04	1.58
Leavenworth, Kans. . . . .	2.06	0.06	1.34	3.02	1.03	1.75	5.07	5.38	3.15	2.04	2.40
Omaha, Neb. . . . .	3.89	0.87	0.11	0.64	0.02	0.44	3.83	5.59	5.86	4.27	1.60
Cheyenne, Wyo. . . . .	0.33	0.03	0.03	0.03	0.02	0.38	0.92	2.41	1.77	1.10	2.07
Denver, Col. . . . .	0.68	0.09	0.29	0.13	0.24	0.23	2.43	0.75	2.24	2.00	1.41
San Francisco, Cal. . . . .	0.11	2.66	5.95	1.58	3.94	0.78	0.43	0.00	0.02	0.01	0.03

3.—Table showing rainfall for year ending June 30, 1878.

Station.	1877.						1878.				
	July.	August.	September.	October.	November.	December.	January.	February.	March.	April.	May.
New York, N. Y. . . . .	In. 3.86	In. 2.54	In. 1.33	In. 7.69	In. 5.48	In. 0.95	In. 4.53	In. 3.41	In. 4.02	In. 1.93	In. 2.73
Cincinnati, Ohio. . . . .	4.25	2.26	1.66	1.85	3.49	3.35	4.33	2.33	4.03	2.05	2.53
Chicago, Ill. . . . .	12.08	3.06	2.02	6.51	6.08	2.75	1.31	2.12	4.39	5.57	5.12
Leavenworth, Kans. . . . .	5.34	2.85	1.95	4.87	2.44	3.18	2.34	2.94	2.35	2.86	2.93
Omaha, Neb. . . . .	0.96	3.13	2.05	5.86	1.36	2.14	1.13	0.14	3.09	3.97	5.77
North Platte, Neb. . . . .	2.04	5.03	4.49	1.23	0.30	3.86	0.00	0.18	1.40	1.15	2.32
Cheyenne, Wyo. . . . .	0.43	0.83	2.02	1.99	0.17	0.33	0.08	0.13	1.16	0.19	4.40
Denver, Colo. . . . .	0.33	1.30	0.38	2.15	0.73	0.79	0.10	0.48	1.82	0.05	2.06
Salt Lake City, Utah . . . . .	0.02	0.28	0.90	2.41	1.02	1.11	1.07	3.49	2.54	2.63	2.56
Winnemucca, Nev. . . . .	0.27	0.00	0.00	0.02	0.79	0.00	0.21	0.89	1.36	0.25	1.13
Sacramento, Cal. . . . .	0.00	0.00	0.00	0.73	1.07	1.43	3.26	8.04	3.09	1.07	0.17
Red Bluff, Cal. . . . .	0.05	0.03	0.00	1.35	3.13	3.98	20.71	16.66	4.16	2.21	0.83
San Francisco, Cal. . . . .	0.02	0.00	0.00	0.65	1.57	2.66	11.97	12.52	4.56	1.06	0.10

4.—Table of monthly and annual mean temperatures.

Station.	1872.			1873.							
	October.	November.	December.	January.	February.	March.	April.	May.	June.	July.	August.
New York, N. Y. . . . .	Fah. 54.1	Fah. 40.8	Fah. 27.7	Fah. 28.5	Fah. 29.3	Fah. 35.7	Fah. 46.3	Fah. 57.6	Fah. 68.9	Fah. 73.9	Fah. 71.1
Cincinnati, Ohio. . . . .	53.9	40.4	29.5	31.1	35.9	41.9	53.9	66.5	77.8	77.6	76.1
Chicago, Ill. . . . .	50.8	32.5	20.3	20.7	24.6	34.6	42.3	53.9	70.2	71.2	71.1
Leavenworth, Kans. . . . .	56.4	35.0	21.0	19.0	30.0	42.1	48.6	63.0	75.5	77.5	79.1
Omaha, Neb. . . . .	53.0	30.6	19.0	16.9	26.9	38.2	44.2	50.0	74.4	75.7	77.1
Cheyenne, Wyo. . . . .	45.2	28.2	23.4	24.6	25.0	39.7	34.4	49.2	69.5	69.7	69.1
Denver, Colo. . . . .	50.0	32.5	27.6	30.0	30.3	44.0	39.8	53.3	68.9	71.4	70.1
San Francisco, Cal. . . . .	58.6	55.7	52.0	54.1	50.4	54.2	54.4	55.6	57.8	57.9	59.1

5.—Table of monthly and annual mean temperatures.

Station.	1877.						1878.						Year.
	July.	August.	September.	October.	November.	December.	January.	February.	March.	April.	May.	June.	
New York, N. Y....	Fah. 74.1	Fah. 74.5	Fah. 68.6	Fah. 56.6	Fah. 46.0	Fah. 39.9	Fah. 32.0	Fah. 34.4	Fah. 43.7	Fah. 52.4	Fah. 58.1	Fah. 65.5	Fah. 53.6
Cincinnati, Ohio...	77.4	75.6	68.9	60.1	45.9	47.8	36.5	41.3	51.7	60.7	63.8	70.1	58.3
Chicago, Ill.....	73.3	71.4	66.6	55.0	40.0	43.1	31.3	35.9	44.4	52.3	55.8	65.4	52.9
Leavenworth, Kans.	76.3	75.1	67.9	54.5	39.5	44.2	33.8	40.2	50.9	58.8	62.3	70.5	56.2
Omaha, Nebr.....	76.0	73.2	64.6	51.1	36.3	39.2	28.9	36.9	48.1	55.0	58.5	68.4	53.2
North Platte, Nebr.	75.5	72.8	64.6	44.6	33.4	30.7	24.9	34.6	44.3	51.0	54.9	66.0	49.8
Cheyenne, Wyo....	70.2	67.9	58.2	40.0	30.1	28.9	25.3	30.9	38.7	43.5	47.9	58.6	44.8
Denver, Colo.....	73.8	70.9	61.9	44.7	34.8	30.0	26.1	36.2	44.3	49.9	54.9	64.3	49.3
Salt Lake City, Utah.	78.2	76.3	65.0	51.0	40.1	31.7	30.0	37.3	45.6	49.8	56.2	69.4	52.0
Winnemucca, Nev....	74.9	72.0	61.8	47.4	38.2	30.3	31.5	35.3	43.5	48.4	55.4	69.0	50.6
Sacramento, Cal....	75.7	73.0	72.8	62.7	53.9	47.8	49.0	51.0	56.5	59.8	66.4	73.0	61.8
Red Bluff, Cal.....	83.4	79.5	77.1	63.8	53.6	46.9	47.2	49.9	55.3	60.3	68.0	82.2	63.9
San Francisco, Cal.	58.9	58.6	61.2	58.2	56.5	52.6	53.0	53.2	55.6	55.2	57.2	58.2	56.6

## REPORT OF THE COMMISSIONER OF PENSIONS.

DEPARTMENT OF THE INTERIOR, PENSION OFFICE,  
Washington, D. C., November 1, 1879.

SIR: I have the honor to submit the following report of the transactions of this bureau for the year ending June 30, 1879:

On the 30th of June last there were 242,755 pensioners. The pension list is now larger than at any previous time. The highest point heretofore reached was in 1873, but the number now reported exceeds the list of that year by 4,344.

The present list is composed of 125,150 Army invalids; 81,174 Army widows, children, and dependent relatives; 1,844 Navy invalids; 1,772 Navy widows, children, and dependent relatives; 11,621 surviving soldiers of the war of 1812, and 21,194 widows of deceased soldiers of that war.

During the year 31,346 new names were added to the list, and 908 names which had previously been dropped from the rolls, mainly from a failure for three years to claim their pensions, were restored, and 13,497 were for various reasons dropped.

The aggregate amount of one year's pension to all the pensioners on the rolls is \$25,493,742.15, but the actual annual payment exceeds that sum by several million dollars. This arises from the fact that nearly all the newly admitted Army and Navy cases have several years' accrued pension due at the time of admission, which is paid at the first payment. During the year the first payments to new pensioners amounted to \$5,763,758.60, of which \$4,375,146.89 were paid to Army and Navy invalids, widows, minors, and dependent relatives, and \$1,388,611.71 to the survivors and widows of the war of 1812.

The first payments to pensioners of the war of 1812 will rapidly fall off, while a material increase may be expected in the Army and Navy cases for several years, owing to the removal of the limitation upon the commencement of pensions by the acts of January 25 and March 3, 1879.

The above-named acts were passed after the estimates for the pensions for the fiscal year ending June 30, 1880, were submitted, and were not, therefore, taken into account when the appropriation was made; and there will be a deficiency in the pension appropriation for the cur-

rent year, as nearly as can now be estimated, as follows: \$ Army pensions and \$30,000 Navy pensions, which should be for, in order that the pensions for the June quarter may be paid.

The number of unsettled claims on the 30th of June last, as the records, was 136,645, an increase of 16,258 within the year. The figures, however, include very few of the claims which were rejected by the repeal of section 4717 Revised Statutes, and the others which have been rejected but called up after the repeal of that statute for consideration. It is impossible, without great labor, to state the number of claims belonging to these classes, but it is estimated that there are not less than 40,000, and these, together with the new claims filed since June 30 in excess of the number settled since that date, swell the number of pending claims at the date of this report to an enormous figure of 200,000, exclusive of the claims for arrears.

If new, original claims continue to be presented as rapidly during the remaining months of the fiscal year as they have been for the first eight months (and there appears no reason for expecting a falling off in receipts), there will be pending in the office at the close of the year more than 250,000 unsettled cases.

Table 10 shows the receipt and disposal of original claims of all classes except for bounty-land warrants year by year from 1862 to 1895, inclusive.

Tables 9 and 9½ show the receipt and disposal of all classes, except bounty land, increase and arrears claims, month by month for the first eight months, from July, 1877, to October, 1879, inclusive.

It will be observed that the number of pending, unsettled claims has increased almost constantly from year to year during the whole of the first eight months of more than eighteen years covered by these tables, and that there has been a great and constant increase in the number of new claims which have come forward.

Since the act of January 25, 1879, commonly known as the "Arrears Act," the new claims of invalids, widows, minor children, and dependent relatives have come in at an unprecedented rate, the invalids' claims being more than double that ever before known in the history of the office, except in the year 1866, and within a few hundred of double that of that year, which it will be noted was the year following the reorganization of the armies, when all the sick and disabled soldiers became once entitled to apply for pension, while the rate of the receipt of claims of children's, and dependent relatives' claims is greater than of any year since 1867, and more than twice the rate of any year since 1879.

Added to this inflow of new business is the pressure of all the old claims for an early settlement, which was great and constantly increasing before the passage of the arrears act, but since its passage has overwhelmed the office with repeated demands of claimants for the adjustment of their claims, and altogether the current work of the office has been increased and has been thrown so far in arrears that there are now many very serious complaints at the delays in answering the inquiries relating to pending claims.

And to increase the difficulties of the situation, the records of the receipt and disposition of the claims in the office, which had long been known to be based upon a system unequal to the demands of so extensive a business, and had been the subject of much study, with a view to devising another system as soon as a proper one could be decided upon, proved to be entirely insufficient under the great load of new claims, and the multitude of inquiries in the old claims which has followed



sage of the arrears act, and it became necessary to enter at once upon the preparation of a new record of the Army claims which originated or might originate subsequently to March 4, 1861.

The records of these claims have been kept in two series of numbers, one for invalid claims and the other for widows (the latter class including children and dependent relatives), and in two corresponding three-letter alphabetical lists. To illustrate: All surnames the first three letters of which are the same in order are recorded together; the combination "SMI" in the invalid list includes 4,500 names; "WIL," 4,900; "BRO," 3,400; "HAR," 3,900; "CAR," 2,700, &c.

The labor of searching for the name of John Smith, Company A, Sixteenth Illinois Volunteers, is therefore very great, and besides, the searcher is liable to overlook the name, and this may result in the filing and prosecution of two claims by the same claimant, or in the office informing an inquirer that no such claim has been filed, or in some embarrassing confusion of claims, and these mistakes occur quite frequently with the most practiced and careful searcher, and as the names increase in number, the labor and difficulty attending the search of necessity increases.

The system for the new record will separate the names of applicants into their proper military organizations, and a search for the name of John Smith, Company A, Sixteenth Illinois Volunteers, will be confined to the members of his own company who have filed applications for pension, or on account of whose service a widow's claim has been filed.

It is apparent that under such a system there will be great economy of time and labor, and mistakes in searching will be next to impossible except through inexcusable carelessness on the part of the searcher, which has its easy remedy.

The labor of preparing the new record is very considerable; it was commenced in June last, and will probably be completed by February or March next, and until then the old system must be maintained.

While I regard it as impossible under the *ex-parte* system to settle the claims either promptly or properly, as I have had occasion in former reports to show, yet there is much preliminary work, and in all stages of the claims much correspondence which should not be put off and may be promptly attended to if a sufficient clerical force is provided, and with a view of partially relieving the office in this class of the business, I respectfully recommend an immediate additional appropriation of \$50,000 for the current year for the employment of additional clerical force. A considerably larger appropriation could economically be expended for this purpose but for the fact that the available room in the building now occupied by the office will not accommodate a greater addition to the force, and it would be inexpedient to divide the office by locating a portion of the force in another and separate building.

It is proper to add here that since a very large portion of the new claims cannot be proceeded with until a report of the military and hospital record of the soldier can be obtained, it will be necessary, judging from past experience, that the clerical forces of the Adjutant-General and Surgeon-General of the Army be considerably re-enforced in order to enable them to respond to the calls of this office with any degree of promptness.

There are now in this office more than 40,000 new claims, in which calls upon those officers for military and hospital records are to be made, and additional cases are coming in at the rate of five or six thousand per month, as will be seen by Table 9.

In connection with the condition of the business of the office, I again

refer to the subject of a change of system for settling pensions which I have recommended in each of my three preceding annual reports and which you have commended to Congress, more especially in your letter of the 18th of February last, and which I now again repeat.

I will not attempt to recite all the facts nor repeat all the arguments which have heretofore been urged in condemnation of the present system and in support of the plan which has been recommended as a substitute for it, but content myself with a concise statement of some of the principal objections to and evils of the present system and the more important advantages which it is believed would result from the adoption of the plan proposed.

Besides being cumbersome and expensive, the present system is open door to the Treasury for the perpetration of fraud. The claims in support of the claims have the same appearance to the office of the bureau, whether false or true. The rules which are established in relation to the production of evidence in attempting to exclude evidence often work a hardship upon the honest claimant. He finds himself often through the death or imperfect recollection of witnesses, or other cause, unable to comply with them, is often defeated, and the fraudulent claimant, who will manufacture the necessary testimony to meet them, succeeds in his claim.

The large sum of money which the claimant will receive in payment of his allowance of his claim, and the ease with which a fraudulent claim can be manufactured, constitute a powerful inducement to dishonesty and to present fraudulent claims, and these occupy the attention of the government in attempting to determine their merits, which ought to be given to meritorious claims, and thus, by the encouragement of fraudulent claims, the system operates to delay the others to such a degree that in many cases, it results in a practical denial of justice. And the pursuit of the necessary medical inquiries is little better than a farce. There are about 1,700 surgeons, for the most part neighborhood practitioners, who make the examinations of the claimants in their respective neighborhoods, and report their condition to the Commissioner of Pensions, which service they are paid by the government a fee of \$1 for each examination.

Without reflecting upon the intelligence and integrity of the surgeons in general, it is a fact that the reports of these examinations often bear evidence that they were of the most superficial character, and not unfrequently are they found to be untruthful in whole or in part, sometimes to the prejudice of the government, and then again to the prejudice of the claimant. And the consequence is, the medical and other professional gentlemen, whose business it is to report upon the medical side of the cases, are oftentimes as much in the dark as to the existence and character of the claimant's alleged disease, the degree to which he is disabled by it, as though no examination were reported, and not unfrequently arrive at wrong conclusions, and the result follows, either to the claimant or to the government.

Connected with and a part of the *ex-parte* system is the investigation of supposed frauds, by clerks under the direction of the Commissioner. While comparatively few persons have been unjustly deprived of pensions through this instrumentality, and vast sums of money have been saved by it, yet it is an offensive method of determining the validity of a pension claim, and is liable to be abused, and under the present system of administration, great injustice may sometimes be done.

On the other hand, the change proposed will possess the following advantages over the present system :

1. The testimony and proceedings to establish the pension claims will be public and of a reliable character; this will facilitate prompt, more just, and more liberal decisions, and protect the Treasury from fraud, while the claimant's expenses will not be increased, but rather diminished.

2. The medical examinations being made by unprejudiced government officials, whose sworn duty it will be to find out and report the exact truth, both the claimants and the government will be relieved from the now too common danger of being made the victims of the ignorance, prejudice, or carelessness of a neighborhood examining surgeon.

3. The special investigation of cases by the special agents will be dispensed with as no longer necessary for the detection of fraud. The publicity of the proceedings in the neighborhood where the claimants reside will operate to restrain the presentation of unmeritorious and fraudulent claims, and furnish ample protection to the government against the successful prosecution of any such which may be presented.

But the great point, and the one to which every other consideration should yield, is, that the new system, through its public proceedings among the claimant's neighbors, will obtain the truth in the cases in such reliable form that prompt justice will be done to the deserving.

It would seem that the fact that *ex-parte* methods in the ascertainment of truth in doubtful or disputed questions have been condemned by the civilized world for centuries, and that open public proceedings, bringing parties and witnesses face to face that they may be interrogated, such as are proposed by the new plan, have been adopted by the unanimous judgment of enlightened people, based upon the common observation of mankind, ought to leave no question as to the propriety of discontinuing the *ex-parte* system in pension claims.

There is another aspect of the *ex-parte* system which should receive the most earnest consideration on the part of the government, and that is its fruitfulness of crime against the laws, in the nature of perjury, forgery, and false personation.

The following table shows the number of the two first named offenses committed in the cases of 500 pensioners whose names have been dropped from the rolls since July 1, 1876, because the pensions were obtained by fraud:

Class.	Number of claims.	False affidavits made by—				Total number of affidavits filed in the cases.	Number of forgeries.
		Officers.	Comrades.	Civilians.	Total.		
Invalid .....	229	201	179	763	1,233	1,581	6
Widows, &c.....	271	95	69	1,687	1,851	2,816	86
Total.....	500	386	248	2,450	3,084	4,397	92

It will be seen that 70 per cent. of these affidavits were false.

There had been paid to these 500 pensioners before their fraud was discovered \$547,225.

The efficiency which characterized the pay service during the year ending June 30, 1878, still continues in the agencies.

The agents quite generally complain that their compensation has been so far reduced that they are embarrassed in the conduct of their

offices. It is my opinion that their compensation is too small and that the expenses for clerical assistance, stationery, and postage are very large and a very considerable expenditure on account of these three items is required of them which was not estimated at the time of the pension act fixing their compensation; *e. g.*, they are required to audit accounts quarterly of the examining surgeons in their respective districts, also to the attorneys the fees allowed them in claims previous to June 20, 1878, and they also carry on a very large amount of correspondence with the pensioners, answering their many questions and giving them instructions. All this requires the expenditure of money for postage, stationery, and clerical service. In addition to this three or four per cent. of the quarterly vouchers are sent to the pensioners, properly executed, and are returned to the pensioners at the expense of the agent, and sometimes letters come to the agent with short notices. These expenditures should be provided for, and I recommend that the law be so amended as to allow them eighteen instead of fifteen cents for each one hundred vouchers prepared and paid, in order to save them for this outside work and expenditure.

Tables 9 and 9 $\frac{1}{2}$  show the progress of the settlement of the claims for arrears to November 1, and Table 8 shows the payments by the pension agents.

It is estimated that the number of settlements yet to be made will not exceed 5,500, and it is believed that the \$25,000,000 appropriated for the payment of the arrears will be sufficient for the purpose.

The labor and responsibility imposed upon the pension agents in making the payments was nearly twice as great as it was estimated to be at the time the appropriation was made for the expenses of the pension agents.

The amount due each pensioner was in most cases considered before paying the arrears it was necessary for the agent to examine the rolls and records of the agency for several years back, and this was a very imperfect and in several series of volumes, and each case usually occupied considerable time in making this examination. I fully recommend that an additional fee of 20 cents in each dollar be allowed the agents, and that an appropriation of \$10,000 be made for the purpose.

Including the claims for bounty-land warrants, there were 62,275 claims filed, exclusive of the claims for arrears, and 62,275 claims of which 40,176 were allowed and 22,099 rejected; an increase in the number of settlements over last year of 18,511. For a more detailed account of the work for the year and comparative condition of the office in each class of cases, see Table 1.

#### SPECIAL INVESTIGATIONS.

The number of cases investigated, including 128 investigations of miscellaneous violations of law by attorneys and others, was 1,000. Of these cases of pensions which had been allowed were investigated, 393 of the pensioners' names were dropped from the rolls and pensions of 55 others were reduced; 825 pending claims were investigated, 468 of which were found to be not entitled; the saving to the Government by these proceedings was \$501,269.82. Of the \$40,000 appropriated for the expenses of the investigations, \$35,842.25 only was expended. For particular detail, see Table 6.

The general efficiency of the clerical force of the office has been improved.



In my last annual report I had the honor to invite attention to the fact that there was no provision by which the chiefs of the divisions in this office could be paid an adequate compensation, and to the discrimination in the statutes between those officers and the chief clerk and appeal clerk, and similar officers of other bureaus and departments of the government. I renew my recommendation for an increase of salary of these officers.

The condition of the business of the bureau continues to require for my assistance a deputy commissioner of pensions.

The results which followed the act of June 20, 1878, providing that the claim agents should collect of their clients their own fees in cases filed after that date instead of being collected for them by the pension agents, corresponded with my recommendation for its passage, as will be seen by the sudden falling off in the receipt of new invalid claims for the first six months of the fiscal year as against the receipts for the preceding six months and as against the average receipts for the whole preceding year. A comparison of these figures shows that the claim agents themselves, as soon as it became their interest to do so, eliminated and refused to file from 30 to 40 per cent. of the whole body of claims.

The arrears act came in in the month of January, and so changed the circumstances, that the effect of the act of June 20, 1878, upon the number of claims presented by claim agents cannot be further followed.

The following tables, some of which have already been referred to, are commended to your attention as embodying and classifying much interesting matter pertaining to the several subjects above alluded to.

Very respectfully,

J. A. BENTLEY,  
*Commissioner of Pensions.*

Hon. CARL SCHURZ,  
*Secretary of the Interior.*

TABLE 1.—Number of claims received, disposed of, and remaining on hand.

For the year ending June 30, 1879.	Army.						Navy.						War of 1812.				Aggregate of all classes.
	Invalids.			Widows, &c.			Invalids.			Widows, &c.			Survivors.	Original.	Restoration.	Total.	
	Original.	Increase.	Total.	Original.	Increase.	Total.	Original.	Increase.	Total.								
Claims pending June 30, 1878.....	57,004	7,000	64,004	34,110	756	34,866	1,195	74	1,269	485	2	487	3,106	16,655	...	19,761	120,387
New claims filed during the year.....	36,835	16,531	53,366	9,767	454	10,221	599	182	781	215	22	237	811	8,891	2	9,702	74,381
Rejected claims reopened.....	1,668	.....	1,668	262	.....	262	2	.....	2	5	.....	5	674	1,607	.....	1,681	3,618
Total number of claims for disposal.....	95,507	23,531	119,038	44,139	1,210	45,349	1,796	256	2,052	705	24	729	4,591	26,553	2	31,218	198,386
Claims admitted.....	7,122	8,069	15,191	3,259	485	3,744	120	70	190	120	23	143	2,548	18,177	2	20,720	40,076
Claims rejected.....	7,882	8,790	16,672	1,196	28	1,224	97	66	163	43	1	46	1,057	2,563	.....	3,620	21,665
Total number disposed of..	15,004	16,859	31,863	4,455	513	4,968	217	145	382	165	24	189	3,605	20,740	2	24,359	61,741
Number pending June 30, 1879.....	80,503	6,672	87,175	39,684	697	40,381	1,579	111	1,690	540	.....	540	986	5,873	.....	6,859	136,645
Increase in number of pending claims.....	23,499	.....	23,499	5,574	.....	5,515	384	37	421	55	.....	55	.....	.....	.....	.....	16,258
Decrease in number of pending claims.....	.....	328	.....	.....	59	.....	.....	.....	.....	.....	2	.....	2,130	.....	.....	12,902	.....

Under the head of increase are included restorations of the Army and Navy class.

The class "widows, &c." of the Army and Navy refer to widows, minors, and dependent relatives. There were received during the year 1,144 applications for bounty-land warrants; 100 warrants were issued; and 434 applications were rejected. 13,898 arrears claims under acts of January 23 and March 3, 1875, were admitted, which are not included in this statement, but may be found in Table 8.

TABLE 2.—Number of pensions allowed and increased during the year, with their annual value, together with the yearly value of all pensions on the roll, and the amount paid for pensions during the year.

Pensions allowed and increased during the year.						Pertaining to whole pension-roll.							
Original.			Increase.		Restoration.		Dropped from the roll.		Reduction in rate.		Whole number of pensioners on roll June 30, 1879.	Yearly value of pensions as shown by the roll June 30, 1879.	Total amount paid for pensions during the year ending June 30, 1879.
Num-ber.	Yearly value.	Num-ber.	Yearly value.	Num-ber.	Yearly value.	Num-ber.	Yearly value.	Num-ber.	Yearly value.				
Army { Invalids.....	7,123	\$380,314 80	7,401	\$398,801 40	668	\$33,506 88	2,063	\$227,218 80	143	\$7,975 96	125,150	\$12,910,588 60	\$14,773,864 76
Army { Widows, &c.....	3,290	410,634 00	334	12,945 84	151	17,793 84	9,131	1,019,991 40	4,885	110,328 00	81,174	8,908,823 07	11,128,113 51
Navy { Invalids.....	120	11,563 20	66	8,917 82	13	730 08	108	106,512 00	.....	.....	1,644	21,815 18	209,003 03
Navy { Widows, &c.....	120	19,958 40	21	2,047 50	3	250 20	89	5,290 00	.....	.....	1,772	312,675 30	324,223 68
War of 1812 { Survivors.....	2,548	250,608 00	.....	.....	72	6,012 00	1,406	124,976 00	.....	.....	11,621	1,115,616 00	1,014,625 66
War of 1812 { Widows of, &c.....	18,177	1,744,992 00	.....	.....	2	182 00	710	68,160 00	.....	.....	21,194	2,034,624 00	2,192,699 54
Total.....	31,346	2,818,070 40	7,822	422,712 66	908	59,384 00	13,497	1,562,138 20	5,067	128,215 96	242,755	25,493,742 15	29,642,430 18
Total amount paid during the year to new pensioners, upon first payment, is to—													
Army invalids.....													
Army widows, &c.....													
Navy invalids.....													
Navy widows, &c.....													
Survivors war of 1812.....													
Widows of, war of, &c., 1812.....													
Total.....													
5,763,758 60													

TABLE 3.—*Appropriations for the payment of pensions for the year and the amount of disbursements during the year ending June 30, 1879.*

	Army.		Navy.	
	Appropriations.	Disbursements.	Appropriations.	Disbursements.
For pensions.....	\$30,359,974 00	\$29,109,203 47	\$544,000 00	\$533,226 06
For fees to examining surgeons.....	50,000 00	45,324 70	1,000 00	753 50
For compensation to pension agents, expenses, &c.....	216,000 00	202,682 97	.....	2,056 45
Total.....	30,625,974 00	29,397,181 14	545,000 00	536,036 62



TABLE 4.—Statement of the number of pensioners dropped from the roll during the year and the cause.

During the year ending June 30, 1879.	Invalids.	Widows, in- dependent, and relatives.	War of 1812.		Total.	Remarks.
			Survivors.	Widows of, &c.		
Loss to the roll:						
By death .....	1, 188	385	600	138	2, 401	During the year the names of 13,749 children were dropped from the roll for various causes and those remained at the close of the year 23,414 whose pensions will expire by limitation as follows: In 1879, 5,975; in 1880, 6,376; after 1880, 11,063.
By remarriage .....		496		3	499	
By limitation (minors) .....		7, 150			7, 150	
Failure to claim for three years .....	586	1, 023	708	554	2, 871	
From other causes .....	297	1, 156	8	15	2, 576	
Total .....	2, 371	9, 210	1, 406	710	13, 497	

TABLE 5.—List of pension agencies with location, geographical limits, name of pension agents with the amount of funds remaining in the hands of each agent for paying Army and Navy pensions, for the year ending June 30, 1879.

Location of agency.		Name of agent.	Amount.		Geographical limits.
City.	State.		Army.	Navy.	
Boston.....	Massachusetts.....	D. W. Gooch.....	\$18,758 61		The States of Massachusetts, Connecticut, and Rhode Island.
Canandaigua.....	New York.....	L. M. Drury.....	39,932 37		The counties in the State of New York not in the New York City district.
Chicago.....	Illinois.....	Ada C. Sweet.....	14,250 38	\$979 76	The State of Illinois.
Columbus.....	Ohio.....	A. T. Wilcox.....	59,863 66	3,068 39	The State of Ohio.
Concord.....	New Hampshire.....	E. L. Whitford.....	47,837 64	2,221 23	The States of Maine, New Hampshire, and Vermont.
Des Moines.....	Iowa.....	B. F. Gue.....	66,911 30		The States of Iowa and Nebraska.
Detroit.....	Michigan.....	Samuel Post.....	16,298 12	1,393 44	The State of Michigan.
Indianapolis.....	Indiana.....	Fred. Kuebler.....	30,595 54		The State of Indiana.
Knoxville.....	Tennessee.....	D. T. Boynton.....	10,789 66	1,161 67	The States of Virginia, West Virginia, North Carolina, Tennessee, Arkansas, Mississippi, Louisiana, Alabama, Georgia, Florida, South Carolina, and the Indian Territory.
Louisville.....	Kentucky.....	R. M. Kelly.....	5,123 74	380 44	The States of Wisconsin and Minnesota and the Territories of Dakota, Montana, and Wyoming.
Milwaukee.....	Wisconsin.....	Edward Ferguson.....	12,828 43	1,104 59	The counties of Albany, Clinton, Columbia, Delaware, Dutchess, Essex, Greene, Kings, Queens, New York, Orange, Putnam, Richmond, Rensselaer, Rockland, Saratoga, Schoenectady, Sullivan, Suffolk, Ulster, Warren, Washington, and Westchester.
New York City.....	New York.....	Charles R. Coster.....	70,767 42	2,435 30	The counties of Berks, Bradford, Bucks, Carbon, Chester, Columbia, Dauphin, Delaware, Lancaster, Lebanon, Lehigh, Luzerne, Monroe, Montgomery, Montour, Northampton, Northumberland, Philadelphia, Pike, Schuylkill, Sullivan, Susquehanna, Wayne, Wyoming, York.
Philadelphia.....	Pennsylvania.....	H. G. Sickel.....	35,544 90	62 87	The counties in the State of Pennsylvania not in the Philadelphia district.
Pittsburgh.....	do.....	W. A. Haddon.....	11 41	2,009 65	The States of Missouri, Kansas, and Colorado, and the Territory of New Mexico.
Salat Louis.....	Missouri.....	R. Canpion.....	49,404 92	5,554 94	The States of California, Nevada, and Oregon, and the Territories of Idaho, Washington, Arizona, and Utah.
San Francisco.....	California.....	W. H. Payne.....	5,466 59	693 60	The States of New Jersey, Delaware, Maryland, the District of Columbia, and all national homes and foreign pensioners.
Washington.....	Dist. of Columbia.....	J. S. Witcher.....	80,935 73	5,395 85	
			565,087 22	24,961 72	

By order of the President under date of May 17, 1879, the agency at New Orleans was discontinued, by consolidation with the Knoxville, Tenn., district.

TABLE 6.—Statement showing the operations of the special-service division for the year ending June 30, 1879.

1,485	126	1,613	Total.	Whole number of claims investigated.
	Miscellaneous—criminal acts, notes, &c.			
	Number.			
	Pension due at the date their names were dropped from the roll.			
	One year's pension at their annual rate.			
	Total amount saved thereby.			
	Amount illegally drawn and refunded.			
	Number.			
	Amount annually saved thereby.			
	Number.			
	Accrued pension due the claimants as first payments.			
	One year's pension at their annual rate if allowed.			
	Total amount saved by such rejection.			
	</			

Attorneys: Suspended, 65; debarred, 27; disbarred, 28; dropped, 44; restored, 21.  
 Criminal prosecutions: Cases submitted, 129 (attorneys, 47, and other persons, 82); convictions, 27 (attorneys, 13; other persons, 14); acquittals, 8; not prosecuted, 4; no bills, 7; juries disagreed, 2; dismissed, 3; awaiting action, 155; pardoned before trial, 2; aggregate sentences, 34 years and 3 months imprisonment.

Number of claims in investigation files July 1, 1878 ..... 1,344  
 Number of claims in investigation files July 1, 1879 ..... 1,004

Decrease during the year ..... 340  
 Number of claims in correspondence files July 1, 1878 ..... 369  
 Number of claims in correspondence files July 1, 1879 ..... 666

Increase during the year ..... 297

Net decrease ..... 43  
 Pending claims investigated, 625; admitted claims investigated (pension 609 bounty-land, 51), 660; total, 1,485.

TABLE 7.—Comparative statement, by agencies, of the number of pensioners at the beginning and close of the year.

Location of agency.		Army.		Navy.		War of 1812.	
City.	State.	Invalids.	Widows, &c.	Invalids.	Widows, &c.	Survivors.	Widows, &c.
Boston.....	Massachusetts.....	8,635	7,175	395	373	812	1,785
Canandaigua.....	New York.....	8,787	6,194			1,141	1,055
Chicago.....	Illinois.....	11,247	5,825	63	26	527	738
Columbus.....	Ohio.....	11,974	8,365	39	70	991	1,724
Concord.....	New Hampshire.....	2,640	7,114	119	109	1,415	2,843
Des Moines.....	Iowa.....	6,989	2,727			260	391
Detroit.....	Michigan.....	6,494	2,232	21	25	431	545
Indianapolis.....	Indiana.....	9,119	4,912			325	585
Knoxville.....	Tennessee.....	3,935	4,813	65	77	2,544	4,887
Louisville.....	Kentucky.....	2,242	3,048	5	14	486	798
Milwaukee.....	Wisconsin.....	5,901	3,390	21	22	278	321
New York City.....	New York.....	8,306	5,632	405	356	701	1,112
Philadelphia.....	Pennsylvania.....	8,456	5,767	265	296	379	931
Pittsburgh.....	Pennsylvania.....	7,084	4,188	38	34	274	607
Saint Louis.....	Missouri.....	7,503	3,967	26	17	428	581
San Francisco.....	California.....	1,656	268	48	14	58	54
Washington.....	District of Columbia.....	10,112	5,687	334	329	571	1,917
Total.....		125,150	81,174	1,844	1,772	11,621	21,194



TABLE 8.—*Arrears payments made at each agency, and number of invalids, widows, children, dependent fathers, and dependent mothers.*

Agencies.	Invalid.			Widows, &c.		Total.		Classification of those pensioned as "widows, &c."			
	Army.		Navy.	Army.		Navy.	Money value.	Num-ber.	Money value.	Num-ber.	Money value.
	Num-ber.	Money value.		Num-ber.	Money value.	Num-ber.					
Boston.....	1,703	\$839,565 01	41	409	\$378,514 50	10	\$22,388 72	2,172	\$1,263,963 46	69	1
Campanagua.....	2,032	538,235 69	14	624	470,500 07	5	4,200 88	2,356	1,437,744 70	23	335
Chicago.....	3,218	1,707,144 70	4	381	377,991 87	5	4,200 88	3,618	2,080,272 07	56	402
Columbus.....	3,422	1,570,010 36	13	494	478,180 55	9	6,007 50	3,922	2,068,869 64	76	285
Cornwall.....	1,537	712,534 94	3	858	682,992 21	2	1,458 53	2,387	1,410,272 61	10	4
Des Moines.....	2,037	1,012,243 45	3	174	173,753 17	2	1,458 53	2,211	1,185,065 02	27	783
Detroit.....	1,538	730,013 80	3	214	205,499 45	2	1,458 53	1,757	850,063 55	13	139
Indianapolis.....	2,701	1,363,801 89	274	274	260,465 22	2	1,458 53	3,035	1,570,267 11	49	192
Knoxville.....	1,065	520,786 10	2	460	454,183 97	2	1,458 53	1,535	878,266 86	311	211
Madison.....	1,774	911,544 94	1	287	260,046 46	1	1,309 57	1,049	631,431 06	101	149
New York.....	2,144	1,025,435 15	53	276	264,371 16	2	3,258 17	2,059	1,180,712 31	19	183
Philadelphia.....	2,014	1,161,481 82	20	396	367,438 49	9	11,800 37	2,571	1,441,786 74	67	230
Pittsburgh.....	1,890	837,943 64	2	332	332,298 86	8	9,986 04	2,215	1,512,422 10	48	282
St. Louis.....	2,287	1,214,781 85	6	321	315,458 99	2	1,529 87	2,608	1,155,902 50	21	278
San Francisco.....	2,180	1,104,290 53	1	240	245,706 30	2	3,314 67	2,535	1,460,062 55	117	112
Washington.....	2,404	1,161,497 21	35	268	264,752 86	7	6,532 81	2,504	1,430,463 33	3	101
Total.....	33,156	16,128,677 75	210	5,867	5,558,347 85	68	74,088 66	39,301	21,880,008 61	1,116	20

There have been rejected of this class 21,906 claims.  
Average per case: Of invalids, \$487.01; of widows, &c., \$948.67; of total number, \$556.72.

TABLE 9.—Monthly receipt of claims for twenty-eight months succeeding June 30, 1877.

Number of claims of all classes filed.

Army and Navy.										War of 1812.		Total number of claims filed.
Invalid.		Widows, &c.		Arrears.	Total Army and Navy.	Survivors.	Widows of, &c.	Bounty land.	Total war of 1812 and bounty land.			
Original.	Increase.	Original.	Increase.									
1877—July.....	1,434	1,031	402	59	.....	8	22	42	72	908		
August.....	1,452	1,453	473	60	.....	7	10	21	38	3,476		
September.....	1,280	2,109	481	19	.....	13	18	22	53	4,002		
October.....	1,293	3,476	437	4	.....	13	15	27	54	5,269		
November.....	1,253	1,654	401	27	.....	15	19	12	40	3,381		
December.....	1,174	1,728	414	87	.....	15	21	18	54	3,457		
1878—January.....	1,402	2,356	417	57	.....	6	21	25	52	4,284		
February.....	1,704	1,822	518	27	.....	13	13	29	55	3,626		
March.....	1,511	2,629	556	46	.....	457	1,224	41	1,723	5,864		
April.....	2,496	1,780	627	65	.....	1,221	5,763	5	6,988	11,956		
May.....	1,932	1,272	712	27	.....	302	3,251	26	3,531	10,257		
June.....	2,156	1,827	569	52	.....	148	1,826	3	1,977	8,284		
July.....	855	1,475	409	68	.....	302	1,211	2	1,313	3,576		
August.....	927	1,888	403	93	.....	80	1,144	54	1,294	4,094		
September.....	1,393	1,766	503	52	.....	83	763	121	907	4,216		
October.....	1,355	1,901	559	24	.....	79	698	105	882	3,316		
November.....	1,646	1,839	528	21	.....	40	509	125	674	3,388		
December.....	1,036	1,154	376	48	.....	53	205	179	537	4,292		
1879—January.....	1,403	1,309	468	45	.....	45	407	206	743	28,340		
February.....	2,125	1,313	759	33	23,372	27,502	43	529	124	29,580		
March.....	4,367	1,820	1,196	33	22,472	20,868	48	526	98	30,580		
April.....	11,610	1,563	1,511	42	8,574	23,350	52	540	656	29,926		
May.....	4,855	1,322	1,651	47	4,493	12,358	44	458	54	12,614		
June.....	6,552	1,643	1,612	33	4,051	14,091	39	444	87	14,661		
July.....	5,121	1,695	1,469	51	1,898	10,174	57	384	70	10,685		
August.....	6,292	1,318	1,468	54	1,992	11,634	47	311	29	11,431		
September.....	5,548	2,277	1,560	43	2,147	11,581	40	380	50	12,027		
October.....	5,468	2,321	1,660	26	1,158	10,642	20	297	49	11,014		

TABLE 94.—Monthly disposal of claims for twenty-eight months succeeding June 30, 1877.

## REPORT OF THE SECRETARY OF THE INTERIOR.

961

Number of claims of all classes settled.

Army and Navy.										War of 1812.		Bounty land.	Total number of claims of 1812 and bounty war of 1812	Total number of claims settled.
Invalid.		Widows, &c.		Arrears.	Total Army and Navy.	Survivors.	Widows of, &c.							
Original.	Increase.	Original.	Increase.											
1877—July.....	1,215	932	426	61	.....	2,654	39	50	21	110	2,764			
August.....	972	1,172	481	57	.....	2,682	88	186	95	369	3,051			
September.....	825	1,243	372	33	.....	2,473	95	34	120	249	2,722			
October.....	1,185	1,897	408	40	.....	2,550	.....	6	5	11	2,541			
November.....	1,130	1,842	483	32	.....	3,457	16	14	29	69	3,546			
December.....	1,381	3,094	497	27	.....	4,999	9	16	22	47	5,046			
1878—January.....	1,147	1,904	583	93	.....	3,727	4	12	18	34	3,761			
February.....	981	2,218	628	61	.....	3,888	2	11	21	34	3,922			
March.....	1,666	2,154	656	53	.....	4,499	10	8	27	45	4,544			
April.....	1,707	1,912	473	82	.....	4,174	180	33	15	228	4,402			
May.....	1,215	1,731	469	58	.....	3,473	400	42	15	457	3,930			
June.....	1,035	1,609	339	83	.....	3,066	349	110	6	465	3,531			
July.....	945	1,302	335	68	.....	2,650	1,171	621	20	1,712	4,362			
August.....	1,156	1,772	263	43	.....	3,234	625	1,177	6	1,808	5,042			
September.....	1,169	1,295	312	29	.....	2,895	393	246	.....	1,754	4,539			
October.....	1,147	1,367	387	51	.....	2,952	246	1,393	.....	1,630	4,591			
November.....	1,170	1,499	322	26	.....	3,017	205	2,056	.....	1,630	4,591			
December.....	872	1,063	311	31	.....	2,277	162	2,318	30	2,291	5,308			
1879—January.....	1,046	1,183	384	69	.....	2,682	187	3,108	19	2,499	4,770			
February.....	817	1,658	292	26	.....	2,703	156	3,090	65	3,360	6,042			
March.....	1,578	1,271	621	40	.....	3,510	113	1,949	113	3,295	5,998			
April.....	1,070	1,414	552	42	602	4,280	131	1,517	93	1,741	6,021			
May.....	2,021	1,402	404	33	3,484	7,344	118	1,277	105	1,500	8,844			
June.....	1,639	1,778	527	79	10,822	14,836	98	913	34	1,045	15,881			
July.....	915	1,960	513	34	10,909	13,357	113	902	38	1,063	14,410			
August.....	603	1,297	455	42	10,267	12,724	72	648	86	803	13,530			
September.....	395	1,263	337	35	14,287	16,317	42	488	74	604	16,921			
October.....	1,037	2,044	415	23	10,920	14,459	36	585	17	638	15,077			
Total.....	32,600	43,292	12,155	1,351	61,291	150,779	5,060	23,825	1,143	30,028	180,807			







TABLE 11.—*Number of pensioners on the roll at the termination of each fiscal year since 1861.*

For the year ending June 30—	Invalids.	Widows, &c.	Total.	Addition.	Reduction.
1861	4,337	4,289	8,636		
1862	4,341	3,818	8,169		467
1863	7,821	6,970	14,791	6,622	
1864	23,479	27,656	41,135	26,344	
1865	33,880	50,106	85,986	44,851	
1866	55,652	71,070	126,722	40,736	
1867	69,565	83,618	153,184	26,462	
1868	75,957	93,686	169,643	16,469	
1869	82,850	103,104	187,963	18,320	
1870	87,521	111,163	198,686	10,723	
1871	93,394	114,101	207,495	8,809	
1872	113,954	118,275	232,229	24,734	
1873	119,500	118,911	238,411	6,182	
1874	121,628	114,613	236,241		2,170
1875	122,980	111,832	234,821		1,420
1876	124,239	107,898	232,137		2,684
1877	128,723	103,381	232,104		38
1878	131,649	92,349	223,998		8,106
1879	136,615	104,140	242,755	18,757	

In the above are included those pensioned for service during the war of 1812; also the widows of the soldiers and sailors of that war.

## REPORT OF THE COMMISSIONER OF PATENTS.

DEPARTMENT OF THE INTERIOR,  
UNITED STATES PATENT OFFICE,  
Washington, D. C., October 20, 1879.

Hon. CARL SCHURZ,  
*Secretary of the Interior :*

SIR: The following is a summary of the business of the Patent Office for the fiscal year ending June 30, 1879:

Applications for patents.....	19,300
Applications for design patents.....	697
Applications for reissue patents.....	639
Applications for registrations of trade-marks.....	1,465
Applications for registrations of labels.....	631
Caveats filed.....	2,674
Patents granted, including reissues and designs.....	12,471
Trade-marks registered.....	1,144
Labels registered.....	403
Patents withheld for non-payment of the final fee.....	828
Total receipts.....	\$703,146 79
Total expenditures.....	548,651 47

Receipts above expenditures..... 154,495 32

The aggregate of expenditures, amounting to \$548,651.47, includes the sum of \$5,000 specially appropriated by Congress for repairing the models damaged by the fire of September 24, 1877, which outlay was no part of the current expense of the office. Whether this item of \$5,000 be included in the current expense or excluded therefrom, the net revenue realized by the government from the operations of the Patent Office during the last fiscal year has only been equaled in a single instance since the office was established. That this increase in the revenue, which the government has obtained from the inventors, has resulted, not from an augmentation of the gross receipts, but from a diminution

of the expenditures, is shown by the following comparative statement of the receipts and expenditures of the last fiscal year and of the preceding year:

Year.	Receipts.	Expenditures.
1877-'78.....	\$734, 887 98	\$665, 902 02
1878-'79.....	704, 146 70	548, 651 47

This decrease in the expenditures has been enforced by the reduction of the appropriations, which has been carried so far as seriously to affect the office and injure the public interests.

The Constitutional provision which confers upon Congress the power to "promote the progress of science and useful arts, by securing, for limited times, to authors and inventors, the exclusive right to their writings and discoveries," evidently imports, not that inventors and hateful monopolists be taxed by the government, but that public benefactors be encouraged and rewarded. That the true theory of the experience of our people with their patent system during the past century, abundantly proves, notwithstanding the existing annoyances which, in many cases, have resulted from the improvidently granted by the office, unconscionably used by the applicants and unwisely adjudicated by the courts.

This being the Constitutional theory and also manifestly the true theory of the relation of the inventors to the public, it is altogether unconstitutional and unjust to maintain in its present condition the system affecting inventors, by imposing upon them, in future years, the tax which amounted, as has been shown, to the sum of \$154,400 during the last year. It is the obvious requirement of justice and of the Constitution that one of two things be promptly done, viz: either the fees exacted from inventors be reduced to the amount which the patent system costs the government, or that the surplus be expended in improving the facilities for the prompt and thorough examination of their applications, and for the efficient performance of the duties which they pay the office to perform.

I respectfully recommend the latter course. The rooms occupied by the examiners are utterly inadequate to the requirements of the service. Many of them are too unhealthy to be fit for any useful purpose, and the storage of material. Each of the examining divisions requires well-lighted and well-ventilated rooms. But in most cases a single room is the only accommodation afforded for the entire examination, including the clerks, with all the desks, models, drawings, and books required for the performance of their work. It necessarily results that each examiner is disturbed by the consultations of the other examiners with inventors and attorneys. The crowded condition of the office retards the transaction of business, and at the same time produces much sickness as well as discomfort among the examiners and clerks. This entails serious loss upon the government and involves great expense to these officers.

A considerable number of clerks engaged on the production of manuscript copies from the original records of the office, are not accommodated in a separate building. Under this arrangement, the records of great value, which should be removed from the building in all circumstances, are daily carried back and forth across a wide street at a risk of damage and loss to which patentees ought not to be subjected.

The government has already levied upon the inventors contributions nearly equal to the cost of the Patent-Office building. In the original statute providing for its erection, which was enacted July 4, 1836, it was ordered that the cost should be "paid out of the patent fund in the Treasury not otherwise appropriated." This would seem to have dedicated, at the outset, all the net revenue realized by the government from the Patent Office to the construction of the building. In 1849 and 1850 specific appropriations of the patent fund were made for the construction of this edifice, amounting to \$200,000. In addition, the government has taken from the inventors enough to make the aggregate net revenue from the Patent Office almost a million and a half of dollars. And yet this bureau is now restricted to a small part, which is also the worst part of the building, the best portions being occupied by the Land Office, the Indian Bureau, the Assistant Attorney-General, and the offices of the Secretary of the Interior. The Patent Office needs, and ought to have, exclusive possession of the entire building, excepting only those portions required for the uses of the Secretary.

Seasonable legislation looking to that end is imperatively required. But meantime some temporary expedients must be devised to increase the room at the disposal of this bureau. I recommend, as one of such expedients, the adaptation of a part of the third story of the west and north wings of the Patent Office to the present use of this bureau, by the construction of temporary partitions, which shall not in any way interfere with the plan adopted for the reconstruction of those wings; and that one or more elevators be constructed from the basement to the third story of the building.

The interests of the inventors and of the public demand additional clerks, in the several grades, and a considerable addition to the examining force, either in the present grade of third assistants, or in a new grade of fourth assistants, at a salary of \$1,200 per annum. I recommend that provision be made by law for ten additional clerks of class 1, three of class 2, two of class 3, and one of class 4; and for 15 assistant examiners, either of the third class, at a salary of \$1,400, or of a fourth class, to be established, at a salary of \$1,200 per annum. These salaries would amount in the aggregate to \$39,000, and would still leave a net revenue to the government, from the Patent Office, of \$115,495 per annum, of which a reasonable portion should be expended in an increase of the grossly inadequate compensation now paid to many capable and efficient employes in the grades of \$360, \$480, \$600, \$660, and \$720 per annum, in the restoration of the salaries of the principal examiners, and chief clerk, and in additions to the technical library of the Patent Office, which, instead of being stinted by inadequate appropriations, ought to be promptly raised to the rank of the best technical libraries of the world.

If the present system of requiring and preserving models shall be continued, before our second centennial an accumulation of more than two millions of models will require for their accommodation not less than fifty halls as spacious as those now used for that purpose. And long before our government shall have attained half the present age of the Government of England the entire Federal District may prove inadequate to the storage of the millions of models under which we shall be buried. The present system cannot be permanent. It will be wise to take the preliminary steps for a change without further delay.

The experience of the English demonstrates that their drawings, which conform to a higher standard than ours, are sufficient for such examinations as their system requires. But it is probable that even accurate

scale-drawings of the highest order of excellence, from working-machines would not suffice for all of our examinations. Models are used in a larger proportion of examinations to inexperienced examiners than to those who have acquired the facility in reading drawings which experience gives; at the same time most of the applications in which complicated mechanism are assigned to experienced examiners by the Commissioner, models are least required. At the present time models are used in the examination of about fifty per cent. of the aggregate number of cases examined by the entire corps, in which models are not required. It is not probable that a larger proportion of the models annually required for the purpose of examination, or for any other legal purpose.

I recommend the enactment of the following statutory provisions in the first step in the right direction:

1. That no model shall be required or filed in any case unless a written certificate filed in the case by the examiner in charge of the division to which the invention pertains that it will be useful in the examination of the application, or upon the special order of the Commissioner.

2. That the Commissioner shall not require the production of a model for the examination in any case in which the applicant shall furnish satisfactory scale-drawings, made from a working-machine, and shall produce for examination a working-machine in operation in the District of Columbia or Washington.

3. That upon the expiration of every patent, the model pertaining thereto shall be sent by the Commissioner to one of the public repositories of science and art in the United States.

It has been the practice of the Commissioner of Patents to certify copies of models for use in the courts. The model being the property of the applicant, this practice seems to be unavoidable. The rule of the law very properly requires the model to be kept in the custody of the Commissioner. There are reasons why this custody should be strictly watchful. Among them is the danger of reissues fraudulently obtained upon altered models under the law which requires a reissue to be for an invention shown in the model, but through mistake or inadvertence not claimed in the specification. If the models are removed for exhibition to the workshops of persons who are not employes of the Patent Office, they are inevitably and constantly exposed to the risk of loss, theft, fraud, if not fraudulent, alteration. The practice has been to send them to mechanics not sworn employes of the government. I recommend the enactment of a law authorizing the employment of workmen to make copies of models for official certification, who shall take the oath of office and give bonds for the faithful performance of their duty in such penal sum as the Commissioner of Patents may prescribe, and shall receive from persons ordering copies of models no compensation as the Commissioner of Patents shall approve in each case, but shall receive no compensation whatever from the Patent Office or the United States.

Testimony of foreigners required in proceedings in the Patent Office cannot be taken in foreign countries subject to the pains and penalties of perjury. It is a serious hardship for contestants in the Patent Office, whether citizens or foreigners, to be precluded from availing themselves of the testimony of witnesses residing in foreign countries. It is the less a hardship for contestants, who themselves present testimony duly taken in the United States, to be placed at the mercy of witnesses who may commit perjury with absolute immunity from



ishment. The interests of American and foreign inventors, who are applicants before the Patent Office of the United States, would be greatly promoted by the enactment, by foreign governments, of laws providing for the execution of commissions, issued by the Government of the United States, to take testimony in foreign countries, to be used in the Patent Office of the United States, and for the punishment of perjury in such testimony. Indeed, similar statutory provisions for taking testimony to be used before the judicial tribunals of the United States would be of manifest benefit to the public. But such legislation cannot be asked of foreign governments unless proffered by our own.

I therefore recommend the enactment of a law authorizing the execution by United States commissioners, or other United States officers, of commissions issued by foreign governments to take testimony in the United States, to be used before foreign patent offices and before all judicial and legislative as well as executive departments of foreign governments, and to punish perjury committed in such testimony, such law to be operative only in favor of such governments as shall make like provision for taking testimony in foreign countries, to be used before the Patent Office of the United States and before all the judicial, legislative, and executive departments of the government.

The photolithographic work annually performed for different bureaus of the executive departments of the government has become large in amount and is very costly. That which is required for the Patent Office involves an annual expenditure of large sums of money, for which, as in other cases, contributions are levied on inventors. It seems just that inventors, to whom the progress of the useful arts in the United States, as elsewhere, is mainly due, should have the illustrated records of their labors kept always abreast of the highest development of illustrative art. The government has no right either to lower or to keep stationary the standard of photolithographic reproduction in order to avoid the reduction of its revenues from the inventors. Its duty is first to secure the best work and next to reduce the cost to the lowest point. The work ought to be done by employes of the government, who could have no interests in conflict with the attainment of the best and cheapest results, under the immediate supervision of the Patent Office, in the city of Washington, so that mistakes can be easily prevented and defects promptly remedied.

I recommend that a division be established in some one of the executive departments for the performance of this work for all the bureaus of the government which shall require it.

On the 14th day of March, 1879, I appointed a board, consisting of the Assistant Commissioner, the senior member of the board of examiners-in-chief, two principal examiners, and the chief clerk, to revise the rules and regulations of the Patent Office, and instructed them to consult with the other examiners during the progress of their work.

On the 31st day of May, 1879, I sent printed copies of their revision to the examiners' divisions of the Patent Office and to the offices of the clerks of the several United States district courts, and invited the examiners and assistant examiners and the attorneys practicing before the office to suggest amendments and criticisms of the proposed rules. Having received in reply many such suggestions, upon careful examination I adopted such as seemed to me to be judicious, and also made such other changes in the rules submitted as seemed proper, and submitted reprints of the revised rules to the examiners and other officers of the Patent Office, and to the attorneys practicing before the office, with a request for additional suggestions. A very large number have

been received. As soon as I shall have completed their examination and made such further changes in the proposed rules as shall seem to me upon further consideration to be necessary and proper, I will submit the new rules and regulations for your approval.

The decrease in the number of patents issued during the present year, which was less by 1,629 than the number issued during the preceding year, undoubtedly results, to a considerable extent, from the completion, distribution, and extensive sale of the photolithographic copies of the drawings of the American patents granted prior to November 20, 1866, and to the distribution of English patents in the examiners' rooms for reference. The facilities for examination secured to the examiners and to the public have expedited the examination and prevented the issue of many worthless patents. The distribution will be continued, but owing to the inadequacy of the mechanical and laboring force available for the purpose since the extra charge of employes, necessitated by the exhaustion of certain appropriations during the last year, the work of mounting English patents has been suspended for many months. The interests of inventors, the public, and of the patentees alike demand the early completion of this work.

The specifications of patents issued prior to November, 1866, have not yet been printed. Copies of these specifications are considered. They are furnished in manuscript at great expense, and a large number of copyists are employed in the preparation of these manuscript copies. It will greatly promote the convenience of the public and the economical administration of the office to print these specifications.

I recommend an appropriation for that purpose of \$50,000 to be expended during the next fiscal year.

The general index of patentees extending from 1790 to 1866 has been in preparation for several years, will soon be ready for the printer. I recommend an appropriation of \$10,000 for its publication.

The illustrations of the Patent Office Report of the year 1866 have not yet been printed. This deficiency in the reports ought to be supplied without delay in order to meet the constant demands of individuals and public and private libraries. The illustrations can be produced by the photolithographic process, at a cost of about \$60,000. I recommend an appropriation of that amount for the purpose.

I also recommend an appropriation of \$60,000 for the photolithographic reproduction of drawings destroyed by fire, to be made immediately available, so that the work may be pushed to completion during the current fiscal year.

The statutory provision now in force is to the effect that the final fee shall be paid within six months after the allowance of the patent, and also that the patent shall be dated not later than six months after the allowance. The result is that a patentee, who pays his final fee on the last day of the six months, is entitled to his patent on that day. The law is to be literally executed. But it is a work of several days to prepare his specification and photolithograph his drawing. This difficulty has hitherto been avoided by the fiction of a new allowance made after payment of the final fee too late to admit of the preparation of the drawing before the expiration of the six months. The necessity for such a fiction ought to be obviated by so amending the law that its execution in all cases be possible. This can be effected by extending the period within which the patent may be dated to seven months from the date of the allowance.

Section 4904 of the Revised Statutes having been construed to contain a mandatory provision that applications shall be subject to interference even after patents are allowed, and until they are signed and sealed, I recommend such a modification of the language of the section as shall exempt every application from interference after the allowance of the patent and the payment of the final fee, and shall restrict subsequent applicants in such case to interference with the patent granted.

My general estimates for appropriations, submitted on the 17th instant, were adjusted to the settled policy of Congress developed in former legislation. The adoption of the suggestions herein made would necessitate additional appropriation.

Very respectfully, your obedient servant,

H. E. PAINE,  
*Commissoner of Patents.*

## REPORT OF THE SUPERINTENDENT OF CENSUS.

INTERIOR DEPARTMENT, CENSUS OFFICE,  
*Washington, D. C., November 15, 1879.*

SIR: I have the honor to report the operations of this Bureau as follows:

At the beginning of the year the Census Office existed by virtue of the provisions of the act of May 23, 1850, the only salaried official being Mr. Harrington, who had served as chief clerk at the Ninth Census, and still remained in charge of the files and records at Washington. The Superintendent of the Ninth Census still held the position without salary, conducting the correspondence arising out of the publications of that Census from his home at New Haven, Conn.

On the 13th of March, Mr. Harrington died, after a lingering illness.

On the 12th of April, 1879, the Census Office was organized under the act of March 3, 1879, providing for the tenth and subsequent censuses, by the appointment of the present Superintendent.

Mr. C. W. Seaton, of New York, a chief of division at the Census of 1870, and the superintendent of the New York State census of 1875, was appointed chief clerk. Clerical appointments of a temporary nature have been made at successive dates, as the exigencies of the service required.

The work of the Census Office, since the organization, has been of two distinct kinds:

First. Work in preparation for the enumeration, which is by law to commence on the 1st of June, 1880.

By the statement of the case, none of the work of this character yields statistical results. It is in no part definitive, but is purely preliminary, embracing the preparation of schedules, the subdivision of the country into supervisors' districts, the canvass of the geographical conditions of enumeration in the several sections for the purpose of grading the rates of compensation so as to secure at once the highest efficiency and the highest economy, the entertaining and answering of thousands of applications for appointment, and, finally, the conducting of the large correspondence which the organization of a service of such popular interest brings upon the office charged therewith.

It has not, however, been upon work of this class that the greater

part of the labor of the Census Office since its organization bestowed.

Second. The collection of certain classes of statistics for the year has been going on since June 1.

There is, by the act of 1879, as by that of 1850, both a census a census year. The census day is June 1, 1880; the census comprises the twelve months ending at that date. The census day on or for which the count of inhabitants is required to be obtained; the census year is the period for which certain classes of facts, relating to the movements of population and conditions of industry, are required to be taken.

But while the act of 1879 and that of 1850 are alike in thus making a census year for the movements of population and industry, a census day for determining their status, the two acts differ in the agencies they establish and the methods they prescribe for obtaining those results.

By the act of 1850, all the statistics to be obtained in the Census were to be collected by the regular enumerators in their house-to-house visits of their several districts. The facts relating to mining, manufactures, to agriculture, to manufactures, to the mortality of the population, and to many other matters of social and industrial interest, were ascertained and reported on by the same officers who made the population.

The inadequacy and the inaccuracy of the statistics thus obtained, which were sometimes positively discreditable and even discredited the Census, their only possible effect being to mislead the public and misrepresent the country, led to the introduction of provisions in the act of March 3, 1879, by which the Census Office is authorized to draw certain classes of statistical inquiries from the ordinary enumerators and place them in the hands of experts and special agents.

In the spirit of this enlightened provision the Superintendent carefully canvassed the field of investigation, with a view to determining what parts of the field promise to yield results to such inquiries of sufficient value, over and above what might be obtained through the ordinary course of enumeration, to justify the necessarily higher cost of the service.

In consequence of this inquiry several important investigations have already been set on foot, of which those involving the greatest interest of labor and expense are here indicated.

#### SPECIAL INVESTIGATIONS CONDUCTED BY EXPERT AGENTS.

##### I.—THE FISHERIES.

The statistics of fisheries have been a blank, or, it would be proper to say, a blotted, page of the Census reports, ever since the statistics were first sought to be obtained, in 1850.

It is questionable whether the results obtained ever reached fifteen per cent. of the actual facts, if indeed they ever reached fifteen per cent. of the actual facts.

The Census of 1870 reported a total value of products of fisheries of millions of dollars, among the items being 647,312 bushels of oysters.

Statistics like these were only calculated to bring the Census into credit, even when they did not have consequences of a more serious nature, as in the international arbitration at Halifax in 1877.

Under the provisions of the act of March 3, 1879, the Superintendent



in June completed arrangements with Professor Baird, Secretary of the Smithsonian Institution, and President of the United States Fish Commission, by which the scientific direction of a comprehensive investigation into the statistics of the fisheries and the fishing populations of the United States should be assumed by Prof. Baird, while the administrative charge of the service remained with the Census Office.

The details of the scheme having been arranged, a number of experts and skilled assistants, under the personal supervision of Prof. G. B. Goode, were put into the field in the early summer.

Special canvassers, well trained for such inquiries, were engaged to proceed in boats along the entire Eastern and Southern coast, from Maine to Texas, visiting every fishing port or fishing village, and collecting the whole body of social and industrial statistics of the populations engaged in this occupation, together with all facts of economic interest relating to the habits and the haunts of the several species of fish, the methods and apparatus of fishing employed, the labor systems in vogue, &c.

Other parties were engaged to canvass the Pacific coast, the Northern lakes, and the Western rivers, while special agents were engaged to work up the oyster fishery and to obtain the statistics of the fish markets of the principal ports.

Some of these parties have now been four months in the field. The character of the reports already received puts the success of this investigation beyond a reasonable doubt. Already large bodies of material are being compiled and tabulated in this office. The work will be actively prosecuted through the winter and the coming summer, until every portion of the field shall have been covered.

## II.—THE MINING INDUSTRIES.

(a) *The precious metals.*—The Census statistics of the production of gold and silver have never possessed the slightest appreciable value, but, on the contrary, have always been erroneous and misleading.

At the Census of 1860 returns were obtained from 2,202 mining "establishments," and estimates were made of the product of 5,000 from which no returns were received. \$27,513,170 only of product was obtained from actual returns.

The product of the two years 1859 and 1860 had been estimated by the United States Commissioner of Mining Statistics at fifty millions of dollars in 1859 and forty-five millions in 1860.

Of the \$27,513,170 actually returned, \$10,135,000 belonged to two establishments in San Francisco County, California, employing together but 15 men, and paying but \$16,440 annually in wages. Of course, this means that these were simply refining and assaying offices. Making the proper deduction on this account, we have but \$17,378,170 of actual metallic product accounted for in the Census.

At the Census of 1870 special efforts were made to obtain accurate statistics of gold and silver production through the established agencies.

The result was slightly to increase the proportion returned, the amount reported being \$26,452,652 out of a production of \$61,000,000, as estimated by the United States Commissioner of Mining Statistics.

This last experience would have proved, even if the nature of the case had not abundantly shown, that a canvass by the ordinary enumerators of population must be utterly worthless. A more grotesque figure can scarcely be imagined than that of a man who knows nothing about mining attempting to extract the statistics of capital invested and product

obtained, from an operator who has his reasons for not telling or any part of it.

Even to the eye of the expert, the *indicia* are few and the tests nice and difficult. The unskilled enumerator becomes sir for ridicule, imposture, and cheap miners' jokes.

Mining having been specially mentioned, in the act of March 3, 1879, as one of the subjects of special investigation, at the discretion of the Superintendent of Census, little hesitation was felt, in view of the facts and conditions recited, in organizing a service for obtaining statistics of this department of the national industry. The creation of this office, at the same session, of the Geological Survey, offer a most fortunate opportunity. A complete understanding and agreement having been reached between the two bureaus, the direction of the investigation into the gold and silver mining of the United States was undertaken by the Hon. Clarence King, of the Geological Survey, while the administrative charge of the office rested, as in the case of the fishery investigation, with the Census Office. The arrangement thus effected promises to be successful, not only in obtaining great accuracy in the statistics collected, but in effecting an economy of expenditure, the skilled agents of the Census Bureau being able to secure, without any additional expense, scientific information respecting the regions they visit for the use of the Geological Survey, and the agents of the latter bureau being often able, incidentally, in their own work of exploration, to make extensive collections of minerals of both social and economical importance, for the use of the Census Office.

Parties have been in the field since July. Several of the most important mining regions of the West have been brought under investigation. I feel assured that it is already put beyond doubt that that the reports of the Tenth Census which deals with the gold and silver industry will be of the highest authority.

Especially in this period of universal monetary discussion, and of general economical survey of the mines of the United States, production of precious metals must be found of interest and value.

(b) *The non-precious metals and coal.*—Arrangements have been completed for a canvass by experts of the whole field of production of copper, lead, and the other non-precious metals, and also of coal, under the scientific direction of the work has been undertaken by Prof. J. W. Pelly, and the agents of the Census Office have been in the field since September.

### III.—POWER AND MACHINERY USED IN MANUFACTURE

By the act of 1850, no provision was made for obtaining the statistics of power and machinery employed in productive industry.

The omission was a grave one. The number of operatives in any branch of the national industry, or in that industry as a whole, is merely one factor. The other factors are the amount of labor employed, the machinery in use, and the amount of steam and water power applied to production. Given the fact that three millions of persons are employed in manufactures, what does this signify, unless it be known what the aggregate horse-power of all the water-wheels and steam-engines is, which their labor is assisted, which cannot at the present moment be ascertained short of the lifting force of thirty millions of men, and may reach a much greater amount?

At the Census of 1870 the Superintendent, impressed with the importance of at least approximate statements on this subject, introduced

inquiry into the manufacturing schedule respecting the kind of power in use in each establishment of productive industry, and the number of engines or water-wheels, with their aggregate horse-power. The returns to these inquiries were duly published in the reports of that Census, and constituted a valuable, as they were a novel, feature of those reports.

By the act of March 3, 1879, the Census Office is authorized to institute inquiries respecting—

The kind and amount of power employed in establishments of productive industry, and the kind and number of machines in use, together with the maximum capacity of such establishments, where the Superintendent of Census shall deem such inquiry appropriate.

As the inquiry into power and machinery is eminently one which requires not only technical knowledge, but high scientific training and wide observation, it has been determined to make this department of statistics the subject of a special investigation. Gen. W. P. Trowbridge, professor of engineering in Columbia College, New York, has been appointed the special agent of the Census Office for the purpose of this inquiry.

Trained assistants are already in the field, and the canvass is being actively prosecuted.

#### IV.—THE DEFECTIVE, DELINQUENT, AND DEPENDENT CLASSES.

The census act of 1850 contained provisions for collecting the statistics of the deaf and dumb, blind, insane, idiotic, and also of all criminals and paupers.

The reason for the special recognition of these classes, in preparing for a census, is fourfold; first, philanthropic, in order that the humane efforts made by individuals or communities for the protection and relief, and, so far as possible, the restoration to society, of the unfortunate classes, may receive intelligent direction; secondly, scientific, in order that the physiological laws which govern the appearance of mental and physical defects, and the social laws which govern the commission of crime, may be disclosed; thirdly, political, in order that the State may know what proportion of its citizens are incapacitated for military and civil service; and, fourthly, economical, in order that it may be known what is the burden laid by pauperism and crime upon productive labor, and what the extent to which exceptional physical infirmities and afflictions in classes of the population, as blindness, deaf-mutism, &c., create an exceptional liability to future pecuniary dependence.

But while the importance of a special enumeration of the defective, dependent, and delinquent classes was fully recognized by the act of 1850, no adequate agencies were provided.

A canvass by the ordinary enumerators of population alone will not succeed in ascertaining the numbers of the several classes, and will totally fail of obtaining those facts relating to their condition which are essential to anything like a just view of the subject.

At none of the three censuses taken under the act of 1850 have the numbers of a single one of these classes been accurately determined. In respect to some, not even an approximation was afforded. It has been exceedingly difficult for the most highly-trained specialists to draw any valuable deductions from the partial and fragmentary data obtained, while the legislator and administrator and the public generally were likely to be misled, rather than instructed, by the figures contained in the census tables devoted to these classes of the population.

In this view, both of the importance of the subject involved and of

the insufficiency of the agencies hitherto employed, advantage has been taken of the provisions of the act of 1879 to initiate a systematic investigation, under expert direction, of the whole field of the defective, dependent, and delinquent classes.

Mr. Fred. H. Wines, for ten years the secretary of the Illinois Board of Commissioners of Public Charities, has been appointed the special agent of the Census Office, and has undertaken an inquiry which, for breadth of plan and fullness of detail leaves nothing to be desired.

If a moderate success be realized, of which I feel confident, the statistics will be far in advance of anything secured at any preceding census.

If this scheme can be carried out to a complete result, of which I hope, the information obtained will have a value which it would be difficult to express.

#### V.—THE SOCIAL STATISTICS OF CITIES.

In 1790 one-thirtieth of the population of the United States lived in cities of 8,000 inhabitants and over; in 1800, one twenty-fifth; in 1820, one-twentieth; in 1830, one-sixteenth; in 1840, one-twelfth; in 1850, one-eighth; in 1860, one-sixth; and in 1870, one-fifth.

At the last date the inhabitants of cities numbered in all 8,071,871.

It is probable that not only the absolute number but the proportion of the total population resident in cities will be found in 1880 to have further increased. It will not be surprising if 12,000,000 of persons constituting a full quarter of the population, are found living in cities of 8,000 inhabitants and over.

The fact that such vast numbers are brought within limited space not only offers an opportunity for pursuing statistical inquiries which would be very difficult if not impossible to extend over the whole country but it also creates a legitimate demand for additional information respecting such communities, inasmuch as they are, by the nature of city life, made subject to vital conditions widely different from those of the population generally. Moreover, the very existence of a city indicates the presence of manufacturing and commercial enterprises, which especially require careful and technical treatment in a census.

For all these reasons it has been deemed best to constitute a department of the Census which should be charged with collecting and coordinating the social statistics of cities, including all subjects proper to the inquiry.

The appointment of special agent in this department has been accepted by Col. George E. Waring, jr., of Rhode Island, and a large amount of material of a wide range has already been collected and in process of reduction.

#### VI.—STATISTICS OF SPECIAL BRANCHES OF MANUFACTURE.

The manufacturing statistics of the Census have not been subjected to such overwhelming condemnation as was visited upon the statistics of mining and the fisheries, but they have never been above severe criticism on account of the inadequacy and often in a high degree the inaccuracy of the returns.

Of the manufacturing establishments returned at the Census of 1870 the statements respecting 80,000, in round numbers, were found so deficient or so manifestly erroneous that correspondence was required before they could be taken up for tabulation.

The labor and expense of such a service were enormous, and yet the



remained at the last the reasonable suspicion that errors, not large enough to be detected with certainty in the individual, might have reached a height in the aggregate to cause a serious departure from the facts of the case.

In the inquiry, what branches of manufacture should be taken up at the Tenth Census for special investigation, the question of cost has necessarily been the determining consideration.

There is no branch of manufacture the statistics of which would not be improved by a special canvass, but there is a wide difference between the various branches as to the degree of improvement which might thus be effected, and also as to the expense of such a service.

The following is the list of special agents appointed for this purpose:

Edward Atkinson, esq., of Boston: The Manufacture of Cotton.

George William Bond, esq., of Boston: The Manufactures of Wool.

Prof. J. S. Newberry, of New York: The Building Stones of the United States, and the Quarrying Industry.

James M. Swank, esq., of Philadelphia: The Manufactures of Iron.

John Lynch, esq., of Portland, Me.: Ship Building.

J. D. Weeks, esq., of Pittsburg: The Manufactures of Glass and of Coke.

W. C. Wyckoff, esq., of New York: The Manufactures of Silk.

Prof. C. S. Sargent, appointed to report on Forestry, also takes the statistics of the Lumbering Industry.

#### VII.—STATISTICS OF SPECIAL BRANCHES OF AGRICULTURE.

In general, the statistics of agriculture can be collected only by the enumerators of population in making the tour of their districts.

Manufactures are usually concentrated in considerable villages or cities, so that a special canvass becomes comparatively easy and inexpensive.

But it would involve a vast increase of the cost of the census were special officers, distinct from the enumerators of population, to be appointed to collect the statistics of the two and a half or three millions of farms in the United States.

Nor does the same reason for a special canvass exist in the case of agriculture, as of manufactures, mining, or the fisheries. In agricultural districts the enumerator is likely to be a farmer, or at least farm-bred, and thus to know enough about such matters to be able to fill the schedules intelligently.

At the same time, it has appeared to the Superintendent that the occurrence of the census affords an admirable opportunity for securing certain large classes of facts relating to land systems, labor systems, modes of culture, applications of machinery, &c., in agriculture, wholly in addition to the bare statistics of the crops produced, which, if justly collated, corollated, and illustrated, cannot fail to be of great interest and value.

In this view, several special investigations of wide range have been undertaken, and others will be set on foot as a favorable occasion shall offer.

The following is the list of experts and special agents appointed in this department of the Census:

Prof. E. W. Hilgard, University of California: Cotton Culture..

Prof. W. H. Brewer, New Haven, Conn.: The Production of Cereals.

Prof. C. S. Sargent, Brookline, Mass.: Forestry.

J. R. Dodge, esq., Washington, D. C.: Orchard Fruits, Tobacco, Hops.

Clarence Gordon, esq., Newburgh, N. Y.: Meat Production in grazing States and Territories.

Professor Hilgard is assisted by a number of eminent agriculturists and geologists. Several States are being traversed for the purpose of the most thorough and exhaustive investigation of the conditions and methods of the cultivation of cotton yet undertaken by any government or association. Mr. Gordon has been in the field since July. The various branches of agricultural inquiry have more recently been set on foot.

#### VIII.—MORTUARY STATISTICS.

But the chief effort made for the collection of statistics relating to the census year, in advance of the occurrence of the June enumeration, is though not one requiring the appointment of an expert or special agent, has been in the direction of a mortuary record, to be kept by physicians and surgeons, of cases of death occurring in their practice.

The United States are at a marked disadvantage, in comparison with almost any other civilized nation, in the matter of vital statistics. We know not the number of persons born or dying in any year or decade of our political history.

The registration of births, marriages, and deaths, which in some countries is rigidly enforced by adequate provisions and sanctions of law, is in some States not even required by statute, while in only a few or four of the States which maintain a formal registration, is the system of such a character as to give any considerable value to the results.

Mere provisions of law will not secure good vital statistics. There must be vigilant administration by expert and thoroughly trained officials, heavy penalties for delinquency, and a disposition of the public mind which will not only allow but demand the relentless enforcement of the law. It is only when it is popularly seen and appreciated that no one can be born into the community or die out of it without affecting the rights and interests of every preceding or surviving member, that adequate legislation and adequate administration will be provided. It is only when recording all the essential facts relating to the beginning and the end of every life.

Outside the three, or at the most four States, above alluded to, maintaining a good system of registration, there are perhaps a score of cities which keep up something like a system of recording births and deaths, of which six or seven have established a reputation for the completeness and accuracy of their published reports.

For all the rest of the country there is either no statistical information at all respecting the number of those who are born or die during a given period, or the statistics are palpably defective.

The disadvantage to the United States arising from the lack of good vital statistics is most serious. Not to speak of the unenviable position of clarity which it gives our country among the civilized and progressive nations; not to speak of the uncertainty in which it involves our political legislation and administration, or of the loss which the scientific practice of medicine suffers from the absence of trustworthy information respecting the range and degree of virulence of certain fatal diseases, and the rate of mortality in one section as compared with its neighbor, the mere pecuniary disadvantage at which our people are placed, in this important matter of life insurance, would, if truly estimated, far outweigh the whole first cost of good vital statistics. Hundreds of millions of dollars have been invested in life insurance in this country with

last thirty years, and yet we have not even an approximate life table\* of the United States. Insurance companies do not know how much they should charge to be safe; the people do not know how little the companies should charge, to sell insurance at its fair value. All parties are and have been operating in the dark in the matter of interests involving enormous expenditures and receipts, for lack of information which only government can supply, and which in almost all other progressive countries government does supply.

In partial recognition of the importance of mortuary statistics, the act of May 23, 1850, required the return, by the canvassers of population, of all deaths occurring during the census year; and if the provisions of the law had been adequate to its intent, the results would have been of great value, even though the facts were obtained but once in ten years.

In truth, however, the statistics of mortality obtained through the census have always been defective and often grossly misleading. In the Seventh Census, 1850, there were returned but 324,394 deaths from a living population of 23,191,876; in 1860, 394,153 deaths from a living population of 31,443,321; in 1870, but 492,263 from a living population of 38,558,371.

It does not need to be said that such a ratio of deaths to living population is maintained in no considerable community of the world. Mr. Elliott estimates that in 1870 41 per cent. of the deaths occurring during the census year escaped record.

The causes of such wholesale omissions in a periodical enumeration may be stated as follows:

In some cases the canvassers fail to put the question; in others, heads of families, or persons answering for them, fail to recall the fact of a death occurring during the year, especially when ten or eleven months have already elapsed since the date of death, and the mind, not unnaturally, refers to the event as having taken place a year or longer before. In still another large number of cases persons die out of families, which class seems not to have been in contemplation of the census law, which makes the return of mortality a family return. In still other cases deaths occur in families, but the very death itself breaks up the family and scatters the surviving members, leaving no one to report the death in the census. In still other cases deaths occur in what are constructively families for the purposes of the census, *i. e.*, boarding-houses, hotels, &c., but the common tie of membership or association is here so casual and so slight that the chances are altogether against the circumstance being retained in memory six or eight months after.†

In the provisions for obtaining vital statistics, the act of 1879 differs from that of 1850, first, by allowing the registration of deaths, under State or municipal authority, to be substituted at the discretion of the Superintendent for the returns of enumerators; and, secondly, by placing it in the power of the Census Office to supplement the strictly official agencies by information derived from other sources. In view of the great importance of the subject, the earliest effort made after the organization of this office was in this direction. A small register was prepared sufficient to contain the record of twenty-four deaths, with a statement of the causes of death, the sex, age, occupation, and nationality of the deceased. A copy of this register was sent to every physician and surgeon, of whatever school, whose address could be obtained by the Census Office, with the request that the recipient would preserve therein a record of all deaths occurring in his practice during the

\* I speak with all respect of the effort made by Mr. E. B. Elliott to construct such a table for the Statistical Atlas of the United States, in 1874. Mr. Elliott's effort was most praiseworthy, and his qualifications were equal to almost any task, but the fatal deficiencies in the information attainable would not allow success.

† Reports of Ninth Census, vol. on Vital Statistics, pp. 192, 193.

census year. The most laborious correspondence was resorted to to form and perfect the list of physicians and surgeons for this year. Nearly 100,000 of these registers have been thus distributed.

The response of the medical profession to this appeal has been gratifying. Even while the list was being perfected, letters were received from hundreds of physicians offering co-operation, and asking to be furnished with a copy of the projected register.

Almost without exception the medical journals and medical associations of the country, of all schools and names, have commended the effort, and urged their readers or members to contribute toward its success.

The Superintendent cherishes the hope, which, he believes, is beyond the reason of the case, that this scheme will secure a vast amount of information relative to the vital conditions of our country, which, under judicious treatment, will yield results of high scientific and social value.

#### THE COUNT OF THE PEOPLE.

With respect to the house-to-house enumeration of the population, which is the primary and principal object in contemplation of the act of March 3, 1879, makes a wide departure from the method previously in use.

The more important changes may be briefly stated as follows:

1st. In the stead of adopting, as the units of supervision, district (or judicial districts) formed with reference to other and altogether different purposes, districts are to be formed wholly and simply with reference to the requirements and exigencies of enumeration.

2d. The number of such districts is increased to 150, more than that of the judicial districts, securing a higher degree of local knowledge in preparation for the enumeration, and rendering possible a closer supervision of the work while in progress.

3d. In the stead of imposing the duty of supervision in the districts, when formed, upon a class of officers (marshals of the United States courts) selected with reference to other and widely different services, and, in a large proportion of instances, crowded to the limits of time and strength by prior official duties, officers (supervisors of districts) are to be appointed solely with reference to their qualifications for the special and highly technical work of the census.

4th. The subdivision of the census districts for the purposes of enumeration is carried far below that required by the act of 1870, the maximum limit being now 4,000 inhabitants (according to the preceding census) as against 20,000 formerly, and the Census Office is empowered to require a still minuter subdivision of the territory, if the good of the service shall seem to require it. By this change a higher degree of local knowledge on the part of the actual canvassers is secured as a security against defective and erroneous returns of the population.

5th. The period allowed for the enumeration is shortened to one month (the month of June) in rural districts and small towns, and to two months in cities, as against five months formerly. This change must necessarily obviate a large part of the errors resulting from the incessant changes of the population, especially during the later summer months.

6th. The appointments of the actual canvassers (enumerators) are made subject to the approval of the Census Office, a measure absolutely essential to good administration, but strangely overlooked in previous legislation.

7th. Instead of an inflexible rule for determining the compensation of the canvassers, which did not recognize the difference in the labor required in the enumeration caused by the geographical features of the country, an



treated a square mile of river bottom or prairie as the exact equivalent of a square mile of rugged mountain, traversed only by broken roads or bridle-paths, the act of 1879 places the matter of compensation, so far as the canvassers are concerned, in the discretion of the Department, which is thus able to combine the economy and efficiency of the service with justice to the persons engaged.

8th. The act of 1879 authorizes, at the discretion of the Superintendent, the use of "prior schedules," or blank forms distributed in advance, to be filled up with deliberation and after consultation between the members of a family; whereas, under the former system of enumeration, the canvasser, in the tour of his district, generally obtained the information from one member, not, as a rule, the head of the family, who was unadvised in advance of the subjects of inquiry, and was called upon to answer hastily a large number of questions relating to several different persons.

The changes of system which have been noted vastly increase the work of the Census Office in making the preparations for the enumeration, but no one should be deemed fit for such a charge who did not rejoice in the added labor and care, in view of the manifold advantages to be obtained.

#### THE CENSUS LAW.

In making these preparations, through the six months that have elapsed since the organization of the service, the Superintendent has become more and more fully confirmed in the opinion that the legislation of the last Congress on the subject of the census was wise and salutary. Not a single fundamental defect in the scheme of enumeration has appeared, nor has any important change occurred to the Superintendent as likely to result in an improvement of the service.

In two minor matters, strictly matters of detail, it is deemed proper to request supplemental legislation; these are—

1st. The extension of the privilege of free transmission through the mails to matter directed to the Census Office, in answer to its inquiries, or in compliance with its requests.

2d. The abandonment of the interrogatory relating to the ownership of the public debt.

The first of the proposed provisions would simply obviate the necessity of one department of the government paying to another department considerable sums in postage on the public service, involving the keeping of unnecessary accounts and an increase of the apparent cost of the census.

The second would result in removing from the course of the enumeration what is likely to prove a not inconsiderable obstacle. The inquiry respecting the public debt can possibly have no valuable result, inasmuch as the great proportion of these obligations are held by public institutions, banking and insurance corporations, charitable trusts, &c., so that were every householder to answer the question correctly, the information obtained would be partial and fragmentary, accounting for but a part of the body of the debt.

But, secondly, it should be remembered that, in spite of the scheme of "prior schedules" in any degree to which it is likely to be used by the Census Office, the questions on the census schedules will often have to be answered by the women of the family in the temporary or protracted absence of the head thereof.

Usually it may be assumed that the wife or daughter knows little or nothing respecting the investment of the family property, and, even in the cases where the knowledge existed, would hesitate to answer on such a point without the consent of the head of the family. It is a

fundamental maxim of enumeration that as few matters as possible should be introduced in the house-to-house inquiry, respecting the wife and the grown daughter cannot be assumed to be equal intelligent with the husband and father.

Thirdly, even when the head of the family is present, the inquiry respecting property in United States bonds is unlikely to secure trustworthy answers, and is certain to provoke distrust and engender animosity.

On every account, therefore, the Superintendent deems it desirable that the interrogatory should be stricken from the schedule.

#### COPIES OF THE SCHEDULES.

The question having been raised whether a copy of the returns provided for by the act of March 3, 1879, should not be made, I desire to present the elements of the case, and leave the matter to the decision of the Department, or of Congress, the question being, after all, rather political than statistical.

By the act of 1850 it was provided that two copies of all returns should be made, the original schedule to be filed in the office of the clerk of court of the county to which the returns related; one copy to be filed in the office of the secretary of state for the State to which the returns appertained; the second copy to be forwarded to the Census Office at Washington, for its uses, both of compilation and of record.

This provision was complied with in 1850 and in 1860. Prior to the Census of 1870 the undersigned, as Superintendent, had the honor to recommend that one of the two copies provided for by the act of 1850 be dispensed with in the approaching enumeration.

The reason given for this recommendation was that a copy of a large number of schedules so vast in extent was only to be made at a great expense, and that, in fact, the set of the returns deposited in the county clerk's office was not only useless, but mischievous, being subject, on account of proximity to the individuals and families enumerated, to curious and malicious examination. This recommendation was not followed by legislation, and at the Census of 1870 two copies of the returns were made, as at 1850 and 1860.

In the draft of a bill submitted with my report of 1878 upon the expediency of new legislation with reference to the approaching Twentieth Census, a copy of the returns was provided for, one set of the returns to be deposited with the secretary of state of the State to which the returns related; the other, either the original schedules or the copy of the same, the Census Office might elect, to be forwarded to Washington.

In the census act, however, as it passed Congress, and received the approval of the Executive, no copy of the returns is provided for; the original schedules, as filled by the enumerators, are to be sent to Washington.

The question now raised is, whether it is expedient thus to dispense with all copies of the census schedules, and trust alone to the originals for all the purposes of the government respecting the enumeration.

The use of a copy of the schedules, if this were to be made, would be practically be wholly in the nature of insurance. The resort to copies of schedules, as deposited in the offices of the secretaries of state for several States, is likely to be, in general, for the most trivial purposes, and, at the best, infrequent and unimportant.

In some of the States, as I have learned through the personal inspection of officers of this Bureau and by correspondence, the schedule

1850, 1860, and 1870 are not preserved in shape and place to be accessible to visitors; in others they are, in fact, seldom or never visited.\*

So vast and cumbersome is such a body of manuscript, that any information which a citizen might desire to derive from the returns could be given by one of the trained officers of the Census Bureau at Washington with far less effort and with far greater accuracy than by a person unfamiliar with such research, looking, for himself, through the schedules at the State capitals; and it may properly be said that the Census Office cheerfully affords, upon personal application, all information which it is deemed proper to extract from the schedules.

Taking the whole country together, therefore, it does not appear to me that the great expense of making a copy of the returns would be justified by the uses which such a copy, in the several States, would serve.

Were it to be provided that every State should receive a copy of the returns on paying for the expense thereof, I do not believe that a single State should incur this expenditure.

The only use of a copy of the returns which seems to be worth much consideration is that which could be made of it in the event of the destruction or loss of the original schedules, during transmission to the Census Office at Washington, or after receipt there.

As, in the nature of the case, there is, in greater or less degree, a danger of such destruction or loss, it is perhaps worth while to state the economical relations of the subject.

The two copies of the census schedules of 1870 cost, at the rates provided by the act of 1850, \$192,660, being at the rate of \$96,330 for a single copy. This amount was exclusive of the additional compensation given under the provisions of the acts of March 3, 1871, April 20, 1871, and the joint resolution of June 9, 1870, which will, in the present discussion, not be taken into account. If the population, the farms, the shops, &c., of the country shall, as is probable, be found to have increased 25 per cent. in the interval between 1870 and 1880, the cost of making a copy of the returns would not be less than \$120,000.

If to this we add the cost of paper, printing, and distribution, the cost of a copy would not be less than \$130,000, and might easily be found to be greater, as in the event of a large increase of population, &c. This, then, may be taken as the minimum cost of the insurance in question.

The danger to be apprehended from the destruction or loss of the schedules during transmission to the Census Office could not be held to justify the expense of a copy. Such destruction or loss could not be supposed to extend further than to small fractional portions of the returns.

At the Census of 1870, reaching from Maine to California, and from the Lakes to the Gulf, not a page of the schedules failed to come to hand, nor was the Census Office obliged to resort for a single statistical fact to the schedules deposited with county clerks or secretaries of state.

Should, however, the entire returns of twenty counties of average population be lost, the expense of a re-enumeration would not exceed one-sixth, or, more likely, one-seventh of the cost of a copy.

The only danger which appears to the Superintendent as possibly justifying the incurring of so considerable an expense for the insurance of the returns, is that of their accidental destruction by fire, after their

\* The State of Rhode Island is the only one, so far as I have ascertained, in which the census schedules are frequently consulted. With a population small in the aggregate, and more compact than that of any other State, with a strong interest in antiquarian and statistical research diffused among its people, and with a very systematic and well organized State census, taken in the intervals of the United States censuses, the people of this highly intelligent commonwealth are reported to make a not inconsiderable use of the class of records in question.

receipt by the Census Office at Washington. Such a destruction, or partial, might of course occur. That not a page of the schedule of any census, beginning with that of 1790, has yet been lost at Washington, affords no certainty of the safety of the incoming schedules. The question simply is, whether the insurance proposed is worth its cost.

The actual expense of enumeration, exclusive of the cost of organization, preparation, supervision, and the compilation of results, and excluding also the cost of the special services and expert agencies provided for by the act of 1879, may be roundly taken at \$2,000,000.

Looking at the schedules simply as property representing this amount of value, \$130,000 seems a very high rate of insurance for the few months at the close of which, if the plans of the Superintendent are carried out, all the purely political statistics of the census, those, that is, which contain the population of States, counties, cities, and towns, with distinction of age and sex, color, nationality, occupation, &c., will be compiled and made ready for publication. A very small fraction of this expenditure would suffice to make such exceptional and extraordinary provisions against all unfavorable contingencies as would reduce the danger of destruction by fire to a minimum, except only in the event of a general conflagration of the city.

But I have no interest to argue against the proposition for a copy of the schedules adversely. The law as it stands, in this regard, represents the desire of Congress to effect a large saving of expense.

The question is not so much a statistical as a political one. If it is felt that, on a matter so fundamental in our political system as the taking of the decennial census for the apportionment of representation among the States, considerations of economy should be strictly subordinate, this Office has no objection whatever to interpose. On the contrary, such a provision would relieve the Superintendent of a certain degree of anxiety which, in spite of every precaution, will inevitably attend the custody of the returns if no duplicates of them anywhere exist.

In case provision be made for a copy of the returns, it should be accompanied by an appropriation of the amount necessary to be expended, not to exceed \$150,000.

Very respectfully, your obedient servant,

FRANCIS A. WALKER,  
*Superintendent*

Hon. C. SCHURZ,  
*Secretary of the Interior.*

## REPORT OF THE ARCHITECT OF THE UNITED STATES CAPITOL.

ARCHITECT'S OFFICE, UNITED STATES CAPITOL,  
Washington, D. C., October 1, 1879.

SIR: Relating to the public works under the charge of the Architect of the Capitol, I have the honor to make the following report:

### CAPITOL.

Since the date of the last annual report from this office, many important changes have been made, particularly in the southern portion of the building.

In accordance with plans recommended by the board having in charge the ventilation of the House of Representatives, and approved by Congress by act passed March 3, 1879, the Speaker's, Sergeant-at-Arms', reporters' rooms at the south of the hall of the House of Representatives



tives have been converted into one room, and by means of large openings into their north wall have been thrown open to the corridor between them and the hall, thus making a large, light, and airy retiring-room for members. The blank doorways in the south wall of the gallery have been opened, and the rooms and water-closet in that portion of the building arranged to suit this modification. To provide accommodations for the committee and the officers thus dispossessed, several room under the old hall of Representatives have been fitted up, and the folding department, formerly occupying these rooms, transferred to the cellar below.

Considerable work has been done in this story in preparing for the reception of the documents to be folded and stored there, and to provide space for the working-room of the folders, a portion of which has been made comfortable for that purpose by putting in wooden flooring. It has been shelved and otherwise arranged for the reception of books and documents. A lift is being put in for the convenience of handling the matter to be stored there. This arrangement will confine the entire folding department to the cellar, and thereby prevent the obstruction of the corridors with books and folding-tables as formerly, and will also do away with the running of trucks over the tessellated floors, which has caused great injury to them, and even to the walls and interior columns of the building.

A new steam-pump, condenser, and small boiler have been placed in the basement. The latter will obviate the necessity for running the large boilers in the summer when steam is required only for pumping, thus saving both fuel and labor.

The recent fire which occurred in a room in the cellar story, filled with scrap-paper, gives additional force to the recommendation in the last annual report from this office in relation to the insecure condition of the roof and floor of the old hall of Representatives in case of fire. The semicircular wall of this room is made of wooden studding, covered with laths and plaster; and the floor of the gallery and the ceiling of the document-room being also of wood. In these rooms there is always a large amount of paper liable to take fire from the same cause of the recent fire, and I think prudence demands that measures should be taken at once to prevent this danger by removing the wooden portion of the hall and substituting that which would be fire-proof.

While a large air-duct is being constructed, and ample means made for the supply of fresh air in the hall of the House of Representatives, it is important that measures be taken to secure for it wholesome air. It has been suggested to plant, thickly, with trees, the strip of government land running from the Botanical Garden to the government reservation at the junction of New Jersey and Virginia avenues. This strip of land lies between the Capitol and the direction from which the malarious winds come, and if this belt be thickly planted, as proposed, it would in a great measure deflect or purify, in part, the air, as in particular seasons of the year the objectionable currents of air, in a sanitary point of view, come from this quarter. In my opinion a wooded belt between the source of this malarial air and the Capitol would greatly improve the salubrity of the air furnished to the halls.

This measure I consider the most important step that can be taken to procure purer air for the hall than is now to be obtained at all times.

The building generally has been kept in good repair. In the northern portion of the building the water-closets have been changed in such a manner as to effect a downward draft through the hoppers.

The brick floors have been taken up from the consulting-rooms of the Supreme Court and wooden floors substituted. These rooms, together

with the bathing-room and passage connected therewith, have painted and otherwise refitted.

Such is the demand for rooms that last session it was necessary up the frame building at the corner of Delaware avenue and C s which was formerly occupied by the Architect of the Capitol, for accommodation of committees of the Senate. This, together with the fact that in many rooms two, and in one room three, committee meetings, show the necessity for more rooms being added to the Capitol building, and architectural propriety suggests that the center portion of the building should be projected at the eastern front.

#### GOVERNMENT PRINTING-OFFICE BUILDING.

As provided by the act approved March 3, 1879, a fire-proof extension has been erected to this building, which consists of two parts: one 60 feet by 60 feet, the other 86 feet 8 inches by 53 feet 8 inches, with a connection with the old building 10 feet by 12 feet, the whole four stories high.

The lower portion is already occupied as a storehouse and machine shop, and the upper stories are being fitted with tables, cases, &c., for the printers and binders.

The whole will be completed and occupied before the meeting of Congress.

#### LIGHTING THE CAPITOL AND GROUNDS.

It will be seen by the accompanying report of Assistant Engineer Rogers, electrician of the Capitol, that by means of the dynamo-electric machines recently put in operation the voltaic battery, formerly used for lighting the hall of the House of Representatives and the rotunda, has been superseded.

It gives me pleasure to state that Mr. Rogers has made some advance in his experiments towards perfecting a constant, steady, and brilliant light.

Owing to the reduction of the estimates for gas-lighting and the fact that an additional session of Congress was called, that was not provided for in the estimates for gas, there remains unpaid to the company the amount of \$2,898.24.

Mr. Rogers in his report says:

As required by the act passed March 3, 1879, dynamo-electric machines have been purchased, viz: Three machines, together with the necessary attachments, including the fitting up of steam-engines, for the sum appropriated. Two of these machines are set in the basement of the south wing, and one about to be placed in the basement of the north wing. By use of these it has been demonstrated that the gas-jets in the halls and rotunda can be ignited, thus throwing out of use the voltaic battery, which has been run heretofore at a heavy annual expense.

Experiments are now being made with a view to lighting the hall of the House of Representatives by the electric light. We have succeeded in overcoming the difficulties of the staglamite, that of the crator, and also that of preserving equidistance of electrodes, and now only a slight flickering remains, which we hope soon to overcome.

Such is the sensibility of the eye to the flickering rays of light that we hesitate to apply the electric lights in the halls of legislation in its present comparatively imperfect state.

#### CAPITOL GROUNDS.

The work on the Capitol grounds has progressed favorably, as may be seen by the following report of Mr. H. F. Cobb, engineer:

"In submitting the annual report of the improvement of the United States Capitol grounds, carried on under the direction and accordance with the plans of Frederick Law Olmstead, I beg to say in general that the works thus far completed have proved to be well executed and of great material.

"The pavements upon the east front were cracked in several places during the severe cold of the early winter, owing to the unequal contraction over the large surface, but no permanent injuries were sustained.

"The condition of the trees and plants is satisfactory. Most of the shrubbery is well developed, and the lawns are in good order.

"The laborers have been kept at work on half-time during most of the year, in order to distribute the appropriation for labor among as many as possible.

"The permanent improvements added since the last report have given much of the park the appearance of completion, and the work now in progress will add still more to the general effect. No new road pavements were laid during the present year. The work upon the footwalks has progressed steadily, and the most important have been paved with artificial stone.

"The main approach from Pennsylvania avenue is now being finished as far as the lower plaza, by carrying forward the design in mosaic previously adopted. Maryland avenue has been commenced in a similar manner. The remainder of the walks are of a plain patent.

"During the year there has been laid 968 square yards of mosaic and 11,500 square yards of plain work. Most of this is in excellent condition.

"The stone screen wall along First street west has been extended around the Maryland avenue entrance. This work in general design corresponds with that already built, but certain details have been changed as improvements suggested themselves. The work has been done in a very creditable manner.

"Red granite lamp-piers have been placed at the carriage entrance leading eastward from Pennsylvania avenue Circle. These are to be surmounted by bronze lanterns of appropriate designs.

"The low rustic wall, bordering a portion of the east park, has been extended entirely around the northern boundary. The design has been varied to conform to the requirements of each entrance, keeping the same general appearance. The material for both this and the south New Jersey avenue entrance comes from Maine.

"The entrance at New Jersey avenue is similar in character to the remainder of the work, but slightly modified in details.

"The coping and walls along the sides of Pennsylvania avenue walk are now under contract, and will be finished during the present season. These, with the steps in process of erection, will complete this approach as far as the plaza connected with the proposed western entrance to the Capitol.

"All the stone work erected during the present year has been contracted at a very low figure, in every instance falling within the estimates.

"The corners at Maryland and Pennsylvania avenues, purchased to complete the circles at these points, were put in possession of the United States November 25.

"The work of demolition on Pennsylvania avenue was commenced immediately and the roadways extended.

"Considerable work has also been done on Maryland avenue. The circle has been outlined, and the walks finished, but it will be necessary for the railroad tracks to be changed, the roadway paved, and the interior circle completed before the designed improvements will have been carried out.

"A large amount of shrubbery and plants has been purchased, as will be seen by reference to the accompanying tables of expenditures.

"Bronze lanterns of suitable designs are now under contract for the

walk entrances at Pennsylvania and Maryland avenues, the carriage entrance at Pennsylvania avenue, and the several entrances along the street, N. W. It is expected that these will be placed in position before November 15.

"The air-duct leading from the southwest ground to the House of Representatives is rapidly approaching completion. The work is thoroughly done and the best materials used. The air-shaft, to be constructed of rock-faced ashlar, bonded with molded courses of dressed granite, is now in process of construction and will also be completed before the assembling of Congress.

"The intercepting sewer along west B street commenced last year has been finished, and the grounds are complete in this respect.

"In extending the air-duct to the place selected, the line intercepted the main sewer leading from the House of Representatives. This accordingly changed, and 314 feet of connecting sewer built at a cost of about \$950.

"A very marked improvement is noticed in the good order upon the grounds since police have been introduced. No disorders have occurred and but little damage has been sustained by depredations."

The subject of the grand stairways and terrace at the western front merits the attention and favorable action of Congress.

#### THE BOTANICAL GARDEN.

The buildings at this place have been put in good order and the furnitions of the heating apparatus out of order have been repaired, and new boilers furnished.

Various rockeries have been constructed under the supervision of William R. Smith, the superintendent.

The grounds on the south of Maryland avenue connected with the garden have been improved by shade-arbors and fences.

Owing to the breaking of the Tiber sewer, caused by the heavy rains of last season, the District authorities were compelled to enlarge a portion of the sewer which runs through this garden, and in order to get the required area of this sewer they were compelled to raise the arch higher than the surface of the garden, and in consequence of this mound which covers this sewer being so high, the main walk of the garden and those running from it should be raised to suit the grades thus rendered necessary. It has been thought best to defer this work until the beginning of next season.

#### COURT-HOUSE IN THE CITY OF WASHINGTON.

Considerable repairs have been made to the roof of the building. The furnaces have been put in condition to serve during the coming winter. The main corridors cleaned and whitened, and the building kept in good repair.

I again urge the necessity of taking out the present hot-air furnaces and substituting steam-heating in their stead.

I also feel called on to notice the insecure condition of the land records of the District of Columbia, now filed in the upper story of this building.

The joists, ceilings, stairs, and roof of this portion of the building are of wooden construction, so that in case of fire there would be great difficulty in securing these land records, which are invaluable to the citizens of the District. In this connection, I will say that the basement-story of this building, all of which is above ground, is of fire-proof construction, a portion of which is not now occupied for public purposes.



and may at a small cost be fitted up as a secure repository for those records.

Very respectfully submitted.

Hon. C. SCHURZ,  
*Secretary of the Interior.*

EDWARD CLARK,  
*Architect United States Capitol.*

## REPORT OF THE BOARD OF VISITORS OF THE GOVERNMENT HOSPITAL FOR THE INSANE.

GOVERNMENT HOSPITAL FOR THE INSANE,  
*Near Washington, D. C., October 1, 1879.*

SIR: The Board of Visitors have the honor respectfully to submit this their twenty-fourth annual report.

The usual statistical information respecting the inmates of the hospital during the year 1878 and 1879 will be found in the following tables:

### Summary.

	Males.	Females.	Total.
Remaining June 30, 1878 .....	600	193	793
Admitted during the year ending June 30, 1879 .....	169	53	222
Whole number under treatment .....	769	246	1,015
Discharged—Recovered .....	68	24	92
Improved .....	30	7	37
Unimproved .....	3	1	4
Died .....	51	12	63
Total discharged and died .....	152	44	196
Remaining June 30, 1879 .....	617	202	819

### Admissions and discharges.

	Males.		Females.		Totals.
REMAINING JUNE 30, 1878.					
Army .....	White .... 401	407	4	4	411
	Colored .. 6		0		
Navy .....	White .... 41	41		189	41
	Colored .. 0				
Civil life .....	White .... 115	152	140	53	341
	Colored .. 37		49		
ADMITTED DURING THE YEAR 1878-79.					
Army .....	White .... 77	80		16	90
	Colored .. 3				
Navy .....	White .... 10	10		37	10
	Colored .. 0				
Civil life .....	White .... 57	79	37	53	132
	Colored .. 22		16		
		169		53	222

		Males.		Females.		Totals.	
UNDER TREATMENT DURING THE YEAR.							
Army.....	{ White....	478	487	4	4	491	
	{ Colored ..	9		0			
Navy.....	{ White....	51	51	177	242	51	
	{ Colored ..	0					
Civil life.....	{ White....	172	231	65		473	
	{ Colored ..	59					
DISCHARGED DURING THE YEAR— <i>Recovered.</i>			769		246		1015
Army.....	{ White....	33	34	17	24	34	
	{ Colored ..	1					
Navy.....	{ White....	5	5	7	24	5	
	{ Colored ..	0					
Civil life.....	{ White....	20	29	7		53	
	{ Colored ..	9					
DISCHARGED DURING THE YEAR— <i>Improved.</i>			68		24		92
Army.....	{ White....	14	14	6	7	14	
	{ Colored ..	0					
Navy.....	{ White....	1	1	1	7	1	
	{ Colored ..	0					
Civil life.....	{ White....	11	15	1		22	
	{ Colored ..	4					
DISCHARGED DURING THE YEAR— <i>Unimproved.</i>			30		7		37
Civil life.....	{ White....	3	3	0	1		
	{ Colored ..	0					
DECEASED DURING THE YEAR.							
Army.....	{ White....	26	26	9	12	26	
	{ Colored ..	0					
Navy.....	{ White....	5	5	3	12	5	
	{ Colored ..	0					
Civil life.....	{ White....	14	20	3		32	
	{ Colored ..	6					
REMAINING JUNE 30, 1879.			51		12		63
Army.....	{ White....	405	413	4	4	417	
	{ Colored ..	8					

*Admissions and discharges—Continued.*

		Males.			Females.			Totals.
Navy .....	{ White....	40						
	{ Colored ..	0						
			40					40
Civil life.....	{ White....	124			145			
	{ Colored ..	40	164		53	198		362
				617		202		819

NOTE.—There were nine less persons than cases under treatment in the course of the year, by reason of seven re-admissions and two transfers, one from private to indigent list, by order of the Commissioners of the District of Columbia, and one from indigent to Army list, by order of the Hon. Secretary of War.

*Physical condition of those who died.*

Exhaustion of chronic mania .....	4
Exhaustion of acute mania .....	4
Paresis .....	12
Pneumonitis .....	2
Phthisis pulmonalis .....	15
Chronic hepatitis .....	1
Epilepsy .....	2
Apoplexy .....	7
Cephalæmia .....	2
Chronic diarrhoea .....	2
Pernicious fever .....	1
Fatty degeneration of heart .....	1
Inanition .....	3
Pyæmia .....	1
Scirrhus of larynx .....	1
Pulmonary gangrene .....	1
Cystitis .....	1
Hydrothorax .....	1
Bright's disease .....	1
Pleuritis .....	1
Total .....	63

*Physical condition of those who died during the year ending June 30, 1878.*

Organic disease of brain .....	5
Phthisis pulmonalis .....	10
Apoplexy .....	6
Epilepsy .....	1
Paresis .....	9
Asphyxia .....	2
Tumor of brain .....	1
Ramollissement du cerveau .....	3
Asthenia .....	6
Remittent fever .....	1
Pernicious fever .....	1
Acute peritonitis .....	1
Total .....	46

NOTE.—Through inadvertence the above table was omitted in last year's annual report, and is now inserted to complete the statistical records of the hospital.

*Duration of the mental disease of those who died.*

Less than three months.....	
Three to six months.....	
One year.....	
Two years.....	
Three years.....	
Four years.....	
Five years.....	
Ten years.....	
Twelve years.....	
Eighteen years.....	
Twenty-four years.....	
Total.....	

*Duration of disease on admission.*

		Males.	Females.
LESS THAN SIX MONTHS.			
Army .....	{ White...	23	
	{ Colored..	1	
		24	
Navy.....	{ White...	6	
	{ Colored..	0	
		6	
Civil life.....	{ White...	26	19
	{ Colored..	10	8
		36	27
		66	27
LESS THAN ONE YEAR.			
Army .....	{ White...	6	
	{ Colored..	0	
		6	
Navy.....	{ White...	2	
	{ Colored..	0	
		2	
Civil life.....	{ White...	4	4
	{ Colored..	2	1
		6	5
		14	5
ONE TO TWO YEARS.			
Army .....	{ White...	35	
	{ Colored..	2	
		37	
Navy.....	{ White...	14	8
	{ Colored..	3	6
		17	14
		55	14
OVER TWO YEARS.			
Army .....	{ White...	5	
	{ Colored..	1	
Navy.....	{ White...	4	
	{ Colored..	2	
		6	
		12	



*Duration of disease on admission—Continued.*

		Males.		Females.		Totals.		
OVER THREE YEARS.								
Army .....	White .....	1	1				1	
Civil life .....	White .....	1		1				
	Colored .....	1		0				
		2		1		3		4
			3		1			
OVER FOUR YEARS.								
Army .....	White .....		1				1	
Civil life .....	White .....	2		1				
	Colored .....	0		1				
		2		2		4		5
			3		2			
FIVE TO TEN YEARS.								
Army .....	White .....		1				1	
Civil life .....	White .....	1		3				
	Colored .....	2		0				
		3		3		6		7
			4		3			
TEN TO TWENTY YEARS.								
Army .....	White .....		4				4	
Civil life .....	White .....	3		0				
	Colored .....	2		1				
		5		1		6		10
			9		1			
OVER TWENTY YEARS.								
Army .....	White .....	1					1	
Civil life .....	White .....	2					2	3
			3					

Table showing the nativity, as far as could be ascertained, of the 4,715 cases treated.

NATIVE-BORN.		FOREIGN-BORN.	
District of Columbia .....	495	Ireland .....	987
New York .....	358	Germany .....	671
Maryland .....	325	England .....	112
Virginia .....	318	France .....	49
Pennsylvania .....	255	Canada .....	38
Ohio .....	132	Scotland .....	34
Massachusetts .....	104	Switzerland .....	15
Maine .....	50	Italy .....	20
Illinois .....	44	Denmark .....	12
Connecticut .....	39	Norway .....	10
New Hampshire .....	39	Sweden .....	10
Indiana .....	37	Poland .....	11
Kentucky .....	32	Russia .....	6
Michigan .....	30	Austria .....	5
New Jersey .....	33	Nova Scotia .....	6
Tennessee .....	24	Spain .....	4
Wisconsin .....	19	Holland .....	6
Vermont .....	22	Wales .....	3
Missouri .....	15	Portugal .....	3
Rhode Island .....	13	Hungary .....	4
Delaware .....	13	Mexico .....	3

Table showing the nativity, &amp;c.—Continued.

NATIVE-BORN.		FOREIGN-BORN.
North Carolina .....	17	Saxony .....
Alabama .....	7	Malta .....
South Carolina .....	7	Belgium .....
Iowa .....	4	Buenos Ayres .....
Georgia .....	8	Costa Rica .....
Mississippi .....	9	Bavaria .....
Louisiana .....	4	Sicily .....
West Virginia .....	5	British Columbia .....
Kansas .....	2	East Indies (British) .....
Florida .....	2	West Indies (British) .....
Texas .....	4	West Indies (Hayti) .....
California .....	2	New Brunswick .....
Choctaw Nation .....	2	Cuba .....
Colorado .....	1	China .....
Arkansas .....	1	Coast of Africa .....
Total .....	2,475	Total .....
Native-born .....		
Foreign-born .....		
Unknown .....		
Total .....		

Form of disease of those admitted.

	Total during the year.
Mania, acute .....	44
Mania, chronic .....	52
Melancholia .....	71
Dementia .....	27
Dementia, senile .....	7
Paresis .....	9
Dipsomania .....	7
Typhomania (Bell's disease) .....	
Kleptomania .....	
Nymphomania .....	
Imbecility .....	3
Opium eaters .....	2
Not insane .....	
Total .....	222

Complications of those admitted.

	Total during the year.
Epilepsy .....	25
Paralysis .....	6
Suicidal disposition .....	6
Homicidal disposition .....	5
Periodicity .....	22
Puerperal state .....	1
Catalepsy .....	
Nostalgia .....	4
Post febrile condition .....	2

As far as could be ascertained, the volunteers of the Army and Navy under treatment during the year ending June 30, 1879, entered the service from the following States:

	Army.	Navy.	Total.
New York .....	57	.....	57
Ohio .....	32	.....	32
Pennsylvania .....	24	.....	24
Indiana .....	24	.....	24
Michigan .....	13	.....	13
Illinois .....	20	.....	20
Wisconsin .....	11	.....	11
Missouri .....	8	.....	8
Connecticut .....	7	.....	7
New Hampshire .....	4	.....	4
Vermont .....	1	.....	1
Maryland .....	6	.....	6
Massachusetts .....	10	.....	10
New Jersey .....	5	.....	5
Maine .....	4	.....	4
Tennessee .....	1	.....	1
Nebraska .....	1	.....	1
Kansas .....	1	.....	1
Delaware .....	1	.....	1
Minnesota .....	2	.....	2
Iowa .....	3	.....	3
North Carolina .....	1	.....	1
California .....	1	.....	1
New Mexico .....	1	.....	1
Kentucky .....	2	.....	2
Louisiana .....	1	.....	1
West Virginia .....	2	.....	2
Unknown .....	8	1	9
Total .....	251	1	252

*Tabular statement of the time of life at which the 4,715 cases treated since the opening of the institution became insane.*

Under 10 years .....	73
Between 10 and 15 years .....	51
do 15 and 20 years .....	304
do 20 and 25 years .....	896
do 25 and 30 years .....	985
do 30 and 35 years .....	836
do 35 and 40 years .....	517
do 40 and 45 years .....	349
do 45 and 50 years .....	232
do 50 and 60 years .....	224
do 60 and 70 years .....	118
do 70 and 80 years .....	42
do 80 and 90 years .....	4
Unknown .....	83
Not insane .....	2
Total .....	4,715

*Private patients.*

				Total.
There were at the beginning of the year..	5 males,	7 females	.....	12
Received during the year .....	7 do.	7 do.	.....	14
Whole number under treatment .....	12	14	do.	26
Discharged during the year .....	6	5	do.	11
Remaining at the end of the year .....	6	9	do.	15

The number of admissions during the year, 222, is 40 in the number last year, and had not especial pains been taken to their friends a number of patients whose condition was so far as to render such transfer safe and proper, the population of must have been largely increased; as it is, the number at the year was 26 greater than at the close of any previous year.

Of the 196 cases discharged 92 are reported as having recovered, in 37 the condition was improved, while there were only which no improvement was apparent.

The number of deaths during the year was 63, or 7.72 per cent. average number under treatment. This is a favorable showing somewhat below the average of previous years.

The number of recoveries, 92, though amounting to more than 47 per cent. of the admissions, is only a little in excess of 9 per cent. of the whole number under treatment. This is not a matter of wonder if we consider the vast preponderance of chronic cases, the great number of men broken down in the country's service who drift through institutions to at last make their home here.

The crowded condition of the house throughout the entire year rendered it impossible to receive pay patients other than the insane of the District and such persons as are by law entitled to treatment here.

Some changes of considerable magnitude have been made during the past year in the hospital buildings that deserve brief notice here. The much-needed appropriation for bakery and laundry was procured and expended as soon as available, and the results promise to be most satisfactory. The old laundry has been greatly enlarged and almost completely remodeled. The best modern apparatus for labor-saving and economy of work in this department has been introduced and is now in full operation. By the addition of a second story good accommodation has been provided for the women employed in this work, together with a room for storing material for laundry use. The building is clean, bright enough and quite satisfactory in its arrangements. When it is considered that on an average more than twelve thousand pieces pass through the wash every week, it will be conceded that no little of the success of the hospital depends upon a well-ordered, well-appointed laundry.

The bakery is an entirely new brick building of two stories with basement. The upper story is being fitted with lodging room for male help employed at the hospital besides the attendants on the bakery, including the baker and his assistant, who have a distinct suite of apartments. The principal story of the building is devoted to the preparation and baking of the bread, with store-rooms for flour and all materials required in baking. Here, by the aid of the most approved machinery, about 35 barrels of flour are every week converted into bread for the household. The capacity of the oven (a Val's Rotary) is such that that quantity could be baked in the time without crowding it.

The bake-room itself is of ample proportions, and it is believed that it has never been exceeded by any in this region.

The basement of this building is arranged for store-rooms for the different departments, including a fire-proof room for paints and medicines, and a smoking-room also fire-proof.

A new boiler-house has been built and is being furnished with Ashcroft's compound tubular boilers, which will be used in the new buildings. A new mattress-shop for the employment of patients is also in process of completion.

The last Congress appropriated \$5,000 for a building for the treatment of



accommodation of 50 patients. It was evident that nothing but the veriest wooden barrack could be built for that sum to accommodate such a number—a building that from its very nature would be worthless for any other purpose when its temporary occupation as a barrack was over. In order, therefore, that the building might still be of use after it should be no longer needed as a lodging for patients, it was decided to increase the sum available for this purpose by \$2,500 from the amount appropriated for general repairs and improvements and to erect a plain but substantial brick building that could be converted into work-rooms for the inmates in the future and serve as a temporary building for hospital purposes now. This structure, though in one sense a mere shell, is built of brick with hollow 18-inch outer walls, and in many respects answers an admirable purpose. In January last it was occupied by about 50 men, carefully selected from among those patients who had been employed in the various departments of work about the hospital. A liberal diet suited to active laboring persons was furnished for their table, and, since these patients were trusted every day about their work, it did not seem necessary to bolt and bar their rooms at night. Accordingly all window guards were omitted and the key turned in the outer door only at evening, like any other well ordered house. The result has justified our expectations, the door being wide open, there is no need to jump out of the window; there being every facility to run away, nobody wants to go; they are content with and rather proud of their new home. If for any cause it becomes necessary to send them back to the main hospital building they generally request to be returned to the barrack again. Of course this arrangement will not apply to all classes of patients, but the experiment will bear extension. Congress thought so, making \$30,000 immediately available for the present relief of our overcrowded wards. That relief is coming as fast as the buildings can be pushed to their completion, and we hope that when occupied they will help to demonstrate some things in relation to the care and cure of the insane that have, in this country at least, been either but imperfectly apprehended or wholly overlooked.

The appropriations of \$1,500 and of \$3,000 for means of protection against fire have been, or are at the present time, in process of being expended. The subject of proper provision against fire is regarded as one of such importance that no apology is needed for introducing here a somewhat detailed description of the arrangements already existing and now being introduced to provide for the safety of the hospital, crowded with its thousand inhabitants.

In the original construction of those parts of the building occupied by the insane every precaution was taken to guard against the ordinary dangers from fire. The partition walls of the rooms are built of brick without furring, the plaster being laid directly on the brick, thus presenting an effective barrier to the passage of fire from one room to another. The entire roof is covered with tin; the floors are counter-ceiled or deadened with mortar, and the stairs in many of the wings are built with iron to insure safe fire-escapes in case of danger. Matches, so far as they are used, are the safety-match, that light only on the box, and in the wards self-lighting burners are placed in the attendants' rooms, and the gas-jets in the wards are lighted with wax-tapers from these. Tanks of about fourteen thousand gallons' capacity are placed in the attics, connected with pumps both at the boiler-house and the river that are equal to supplying the ordinary demands for water for the building and its inmates. A six-inch iron main connects the pumps at the river with the reservoir at the boiler-house, or will deliver the water at the

tanks in the attics if required, the latter being a direct elevation more than two hundred feet. Hydrants connected with the hill are placed at convenient distances outside of the building to command any section in case of fire, the connections being two and a half inch diameter and fitted to receive the hose of the fire department of the District. There is also a small hand fire-engine and about a hundred feet of two and one-half inch standard leather hose and equipment, comparatively complete and in fair working order, already provided when the appropriations, amounting to four thousand five hundred dollars, were made to perfect the provision. It is much, in a matter of such grave importance, to place safety valves and fire-escape ladders, and other fire-escape apparatus, at the perilous adventure. At convenient points through the building pipes of two inches in diameter are being carried up to the attics and connected with the hydrant system of pipes, having attachments for hose on each floor and suitable hose one and a half inches in diameter placed in connection to each attachment. These are all so capped that they will receive either smaller hose, or, if necessary, this can be removed and the ordinary two and one-half inch standard hose attached with hardly a moment's delay. These pipes always carry the ordinary pressure of the service, and in case of fire by the closure of a single valve in the main pipe the pressure of the service can be substituted. Five hundred feet of Boyd's standard 2½-inch hose and one thousand two hundred and fifty feet of 1½-inch belting lined hose has been purchased for these hydrants. Two Barrington ladders, with a full set of single ladders, have been added. Galvanized-iron water-buckets hung at the foot of every stairway, and a hydro-pneumatic fire-extinguisher placed in the central office, are all for the protection of the weakest link of the chain proved to be that no fire pumps were especially designed for fire-pumps, and they were not adapted to the strain of throwing a full stream to the highest point of the hill. To meet this difficulty a Knowles fire-pump has been purchased, with a steam-cylinder of sixteen inches diameter, a water-cylinder of sixteen inches, and sixteen-inch stroke, guaranteed to throw four feet of water at the same time to the top of the tower of the hospital. To guard against the possibility of being left without water on the hill, a large reservoir will be built in the rear of the hospital building, having a capacity of forty thousand gallons, so arranged as to be available to the fire-engines of the fire department. A new pipe will connect this, as well as the hydrant system, directly with the river at the river having an ordinary delivery of two hundred and fifty gallons per minute and capable of being run with entire safety at more than twice that velocity. With these pumps and hydrants connected and a trained fire brigade, there will be few public buildings in the District better protected from fire than these. Certainly there are none where a perfect provision of this kind is a more vital necessity.

The farm and garden have continued to be a source of health and profit to the institution.

Even at the very low prices of farm and garden produce ruled throughout the year, the farm has more than paid for its maintenance. Great pains has been taken to increase the herd of milch cows, and now one of the finest in this section. The average daily yield of milk has been a little over eighty-six gallons, and this Alder milk is in no sense a watery product; we hope to yet increase the yield to one hundred and fifty gallons. Considerable attention has been paid to barn-yard fowls. The soil on the out-farm seems well suited to poultry culture, and quite extensive hen-houses have been erected and stocked with the most approved breeds of poultry. These, in conjunction

the swine already established there will, we trust, make ham and eggs as much a St. Elizabeth specialty as our Alderney milk and outdoor grapes now are. Nor is the material gain all; we find with many of our inmates a growing interest in all these things; they become the quickening of a new life, a diversion and a solace from the sadder world within. Whatever takes the insane man from the contemplation of himself aids in his cure, and in this direction the value of farm and grounds is not to be estimated in money.

The current expenditures and receipts of the hospital for the year are as follows:

## EXPENDITURES.

Expended for flour, crackers, &c.....	\$2,094	67
butter, cheese, and eggs.....	7,035	38
meats besides those raised at hospital.....	21,241	56
poultry, fish, and marketing.....	3,492	47
groceries and ice.....	18,229	55
potatoes and other vegetables.....	2,935	29
supplies to farm and stock.....	3,508	82
feed for cows and other stock.....	4,996	36
repairs and improvements on buildings, cooking, heating, and lighting apparatus, water supply, farm and garden lands, and roads, &c.....	14,209	09
repairs to vehicles, harness, horseshoeing, &c.....	1,081	10
furniture, bedding, crockery, &c.....	8,707	19
boots, shoes, and findings.....	2,086	59
dry goods and crockery.....	9,470	05
tools, stationery, printing, and postage.....	1,294	23
fuel and light.....	8,033	74
amount refunded to pay patients.....	742	09
eloped patients.....	192	70
medical and surgical supplies.....	1,732	72
amusement of patients.....	171	43
miscellaneous supplies.....	24	00
house rent.....	100	00
salaries and wages.....	58,119	98
returning recovered patients to their homes.....	310	40
	<hr/>	
	176,809	41

## RECEIPTS.

From Treasurer of the United States.....	150,000	00
From the District of Columbia and other sources for patients' board.....	26,809	41
	<hr/>	
	176,809	41

The products of the farm and garden, with their estimated values, are given below:

Apples, 87 bushels, at 50 cents.....	\$43	50
Asparagus, 1,915 bunches, at 6 cents.....	114	90
Beans (Lima), 267 bushels, at \$1.50.....	400	50
Beans (string), 195 bushels, at \$1.....	195	00
Beans (white), 16 bushels, at \$1.....	16	00
Beef (fresh), 9,625 pounds, at 7 cents.....	673	75
Beets, 1,168 bunches, at 3 cents.....	35	04
Beets, 776 bushels, at 50 cents.....	388	00
Beets (greens), 78 bushels, at 75 cents.....	58	50
Blackberries, 45 quarts, at 10 cents.....	4	50
Cabbage, 16,393 heads, at 5 cents.....	819	65
Cabbage-sprouts, 21 bushels, at 35 cents.....	7	35
Cantaloupes, 3,200, at 3 cents.....	96	00
Carrots, 741 bunches, at 2 cents.....	14	82
Carrots, 27 bushels, at 50 cents.....	13	50
Celery, 14,336 heads, at 4 cents.....	573	44
Cherries, 71 bushels, at \$2.....	142	00
Chickens, 164 dozen, at \$4.....	66	00
Corn (green), 2,729 dozen ears, at 10 cents.....	272	90

Cucumbers, 3,122, at 1 cent.....	
Cucumbers (pickle), 31,922, at $\frac{1}{2}$ cent .....	
Currants, 88 quarts, at 12 cents.....	
Eggs, 1,050 dozen, at 16 cents.....	
Egg-plant, 732, at 3 cents.....	
Ducks, 7 dozen, at \$5 .....	
Figs, 193 quarts, at 20 cents .....	
Geese, 25, at 75 cents.....	
Grapes, 9,437 pounds, at 5 cents.....	
Horseradish, 31 bushels, at \$2.....	
Kale, 1,105 bushels, at 50 cents .....	
Lettuce, 4,721 heads, at 1 cent.....	
Milk, 31,461 gallons, at 28 cents.....	
Oyster-plant, 2,744, at 1 cent .....	
Okra, 603 quarts, at 4 cents.....	
Onions, 330 bushels, at \$1.....	
Onions, 7,800 bunches, at 3 cents.....	
Parsley, 3,266 bunches, at 1 cent.....	
Parsnips, 107 bushels, at 75 cents .....	
Pigeons, 133, at 25 cents.....	
Peppers, 2,543, at 3 cents.....	
Pease, 498 bushels, at 75 cents.....	
Pork, 17,931 pounds, at 5 cents .....	
Potatoes (Irish), 590 bushels, at 80 cents.....	
Potatoes (sweet), 132 bushels, at 40 cents.....	
Pumpkins, 374, at 3 cents.....	
Quinces, 64 bushels, at \$3.....	
Radishes, 1,607 bunches, at 3 cents.....	
Rhubarb, 35 bunches, at 6 cents .....	
Spinach, 50 bushels, at 50 cents .....	
Sage, 100 bunches, at 5 cents .....	
Squash (summer), 2,848, at 1 cent.....	
Squash (winter), 1,671, at 5 cents.....	
Strawberries, 824 quarts, at 8 cents .....	
Tomatoes, 8134 bushels, at 50 cents.....	
Turkeys, 45, at \$1.50.....	
Veal, 917 pounds, at 8 cents.....	
Watermelons, 276, at 6 cents.....	

The following products having been consumed on the farm included in the foregoing table:

Grass pasturage .....	
Oats in straw, 22 acres, at \$20.....	
Corn fodder, 12 acres, at \$30.....	
Corn, shelled, 100 bushels, at 60 cents.....	
Grass cut green, 5 acres, at \$25.....	
Hay, 204 tons, at \$15 .....	
Straw, 48 tons, at \$12.....	
Ruta-bagas, 216 bushels, at 40 cents.....	
Mangold-wurzel, 115 tons, at \$10.....	

#### ESTIMATES FOR THE YEAR ENDING JUNE 30, 1889.

1. For the support, clothing, and treatment in the Government Hospital for the Insane, of the insane of the Army and Navy, Marine and revenue-cutter service, and of all persons who have become insane since their entry into the military or naval service of the United States, and who are indigent, and of the indigent insane of the District of Columbia, \$175,000.

The number of inmates of the hospital June 30, 1879, was 835, the date of this writing (September 20, 1879) is 935. There is an increase of numbers admitted over and above those discharged, and many have been sent to friends with a view to relieve the crowded



dition of the hospital. It will not be safe to estimate the number to be provided for by the 1st of July, 1880, at less than 850, and it will probably exceed that number; \$225 per annum, exclusive of the farm products, is not an extravagant estimate for the support of each patient, including clothing and all other necessary expenditures. On that basis \$191,250 will be required for the support of the hospital for the fiscal year ending June 30, 1881. If, as for some years past, the authorities of the District are required to pay one-half the expenses of the indigent insane of the District admitted since July 1, 1876, that sum will not vary much from \$16,000, leaving in round numbers \$175,000 to be appropriated by Congress.

2. For general repairs and improvements, \$10,000.

The proper care of the buildings and grounds, to prevent deterioration and decay, requires a very considerable annual expenditure, and when it is remembered that the United States has more than half a million of dollars invested in this hospital property, it may fairly be questioned if the sum asked is not too small for its proper care and preservation, to say nothing of improvements. Hitherto instead of asking a special appropriation for the care of the roads and grounds, as in the case with other public buildings, everything of this kind has been included under the general head of repairs and improvements. The appropriation of \$5,000 for the present fiscal year will prove quite inadequate for the purpose, and but for the fact that several improvements have received special appropriations it would be necessary to ask for a deficiency to accomplish all that really ought to be done in the present year.

3. For special improvements, as follows: Reservoirs and filters to furnish pure water for the entire hospital service; additional accommodations for neat cattle, and for storage of hay, farm wagons and implements; a kitchen and scullery detached from the main hospital building; a mortuary building and a greenhouse, \$25,000.

More than 1,000 people are dependent upon the water supply of the hospital; the daily consumption is never less than 100,000 gallons, and usually exceeds that amount, the pumps running without stopping, the speed only being somewhat reduced at night. With the exception of a limited supply of spring water, which is barely sufficient for drinking purposes, all the water consumed is raised from the Anacostia River. This stream is reasonably free from organic matter, and with a moderate outlay for filtering works and depositing reservoirs can be rendered sufficiently pure for all domestic purposes. As it is, every storm leaves it for days unfit for any use unless as a fertilizer. This state of things cannot be remedied too soon, even at the cost of bringing the Potomac water from the city.

In the necessary increase of our milk cows that the supply of milk may keep pace with the growth of population, we have found our accommodations for stock too limited and have been obliged to care for a considerable portion of our young cattle in sheds. For years the hay crops have far exceeded our barn room for storage, and some fifty tons are now standing out exposed to the weather. The government cannot afford to stack its hay and leave its animals and farm implements without proper shelter, when a trifling expenditure will remedy it.

The removal of the bakery from the basement of the hospital to a suitable building provided under an appropriation made by the last Congress has proved a great improvement, the female wards no longer having the heat of the baker's oven added to the summer's glow. The same necessity exists even in a greater degree for a detached building for use as a kitchen and scullery. This department of domestic work

is now carried on in the basement of the center building at considerable disadvantage and greatly to the discomfort of the general population, situated directly over the kitchen, where the heat at times becomes more than equatorial, and the odor of cooking received is sufficient to annoy the whole building.

A suitable mortuary building is still wanting, and the necessity for an indispensable structure hardly calls for any explanation.

A greenhouse is required to enable us to propagate such plants as are needed for the embellishment of the gardens and grounds, and is in the interest of economy; it should be more than this—it should give us a winter garden for the recreation of the inmates, and afford a place for their rooms when the lawns are no longer bright.

It is thought that these special improvements may all be accomplished for the sum of twenty-five thousand dollars, and it is recommended that such part of this as is deemed necessary for the provision of patients should be made immediately available.

4. For furnishing and fitting the relief building for its occupancy of patients, including the heating apparatus and the finishing of the upper story, \$15,000.

Congress, at the last regular session, appropriated \$30,000, immediately available, for the relief of our overcrowded wards by the erection of barracks or associate accommodations for such of our inmates as might safely be provided for with a somewhat less liberal expenditure than that afforded by the main hospital edifice. The relief building, which the brickwork was commenced the first day of May last, and was completed in September, being placed under roof. They consist of a central building of four stories and a basement, 60 feet long by 45 feet wide, and are connected by short corridors two wings of three stories and a basement, each 75 feet long by 32 feet wide, also a wing of the same length and width running back 32 feet from each building. These buildings are thoroughly built of unpressed brick in a plain but substantial manner, and when finished will furnish good present accommodations for two hundred cases of a mild type of insanity. When the sum appropriated is taken into account, the appearance of the buildings is very creditable. It will be better economy to finish off a portion of the rooms in a more thorough manner, rather than to occupy the whole structure with a bare rack with whitewashed walls and rough floors. It is now the intention that one wing may be ready for occupation by the 1st of May, 1881, one year from the date of its commencement. No effort will be spared to have it ready at even an earlier date, if possible, and in order that there may be no delay in this, we ask that the appropriation of \$15,000 for the heating apparatus and furnishing the entire building ready for occupancy, together with the finishing of the rooms in the upper story, should be made at once available.

5. For a permanent extension of the accommodations of the hospital by the erection of a separate hospital building for the female patients, \$300,000, one-third of which is asked for expenditure in the year ending June 30, 1881.

While realizing the great relief that will be temporarily afforded by the new buildings that are now being erected are occupied, and although it can hardly be overestimated, it is idle to claim that anything more than the present necessity for immediate provision for our great numbers has been met. It is impossible that full justice can be done to these unfortunate wards of the nation, or that "most humane and enlightened care" rendered which the organic act establishing the hospital requires at our hands, so long as no separate building and



grounds are provided for the female inmates. This is now the great want of the Government Hospital for the Insane, the hospital that from its position and national character should illustrate the American idea of a most complete public provision for the insane. Such hospital should contain in itself all that experience has shown to be of avail in the treatment of the insane, or that sanitary science has demonstrated to be of importance in making provision for congregated invalids or of value in prolonging human life.

If another temporary makeshift, to be shortly succeeded by still another, is to be avoided, the hospital for the females should be commenced at once. Only a third of the estimated amount is needed for expenditure in the fiscal year for which this appropriation is asked. The foundation of the entire building, including air-ducts, sewers, and all underground work, should first be laid and then time allowed for the work to become firm and consolidated before the superstructure is commenced. Three years may properly be taken in building it, and with our constantly increasing numbers it cannot be commenced too soon. If any further argument were needed in support of such an appropriation it may be found in the following resolutions passed by the American Association of Medical Superintendents of Institutions for the Insane, at their annual meeting held in Washington in May, 1878:

That this association has had great satisfaction in visiting and carefully inspecting the Government Hospital for the Insane, giving, as it does, renewed evidence of the liberality and humanity of the public authorities in their generous provision for these unfortunate wards of the nation, and especially as showing very strikingly the fidelity, economy, and ability with which appropriations heretofore made for its buildings and support have been used on all occasions.

That while recognizing the high position thus far deservedly held by this hospital, which ought ever to be, in all respects, the model institution, to which the different States could look for a safe example when making provision for their insane, the association is reluctantly compelled to refer to an existing and obvious deficiency, which is sure to seriously impair its usefulness and lower the high standard of character which it has heretofore maintained. That the defect just alluded to consists in its greatly crowded condition, rendering impracticable the best matured plans of treatment, and certain to show in the future, in a still higher degree, the great and serious losses that must be sustained by this unfortunate condition of its wards.

That this association firmly believes that all these deficiencies and defects can be remedied by the prompt provision of additional accommodations, which no plea of expediency could justify being made anything below the highest standard long since adopted by this association; and it would, therefore, most respectfully commend the subject to the earnest consideration of the representatives of the people for whose benefit this noble hospital has been established, as one demanded by the strongest claims of an enlightened humanity and a true economy.

This is the opinion of experts in these matters, drawn from almost every State in the Union and the British Provinces, and men who know that whereof they affirm.

Is it too much to ask that the United States should make the best known provision for those who being under the care of the government have not the mind to care for themselves? It is a little thing for the nation to grant—it is no little thing for the unfortunate ones for whom she gives it.

As hitherto, we are indebted to a number of the amateur clubs of this vicinity for their aid in the entertainment of the inmates with concerts and theatrical exhibitions.

Also to A. R. Venable, jr., of Virginia, for the present of a fine Berkshire pig for the improvement of our swine, and to the Agricultural Department for a variety of young fruit-trees for our grounds.

Miss D. L. Dix lays us under renewed obligations, not only by her kindly presence in our wards, but by the present of a valuable set of the

American Journal of Insanity, neatly bound, for our library with odd numbers of different hospital reports needed to complete the files. Our thanks are also due to the superintendents of hospitals who have aided us in our endeavor to obtain full sets of reports of the American hospitals for the insane. It seems quite probable that as complete a collection as can be made of this class of papers should be established here, both as a matter of reference and as a full history of this specialty in America may be preserved as national capital. To any one having old files or odd numbers of reports that they are willing to contribute we will gladly send those reports that are still missing from our shelves and desire the expense of forwarding anything that they may be able to send.

We are indebted, through Mr. John A. Baker, of Washington, to the Ames Plow Company for a side-hill plow of approved pattern.

The ladies of the board have also continued to favor our floral offerings, which have been quite acceptable. In connection with this it seems proper to acknowledge the receipt, by order of the Honorable Secretary of War, from the dismantling of the old building of the War Department, of the door of the private office of the Secretary, one marble mantel, as relics to be placed in the new relief building now in process of erection. They will certainly be prized and preserved as our "boys in blue"; and years hence these traces of that old time will be identified with so much that has become history, will remind us of the generation of our heroic age and "the giants on the earth in the old time."

There has been no change in the medical staff during the past year. The officers of the hospital have continued to discharge their duties with diligence and that increasing measure of success which is the result of experience of years and devotion to their work insure.

Rev. S. F. Ryan, who has conducted the Sunday service in place of Rev. J. O. Sullivan during the past year, has been appointed to the place of Rev. John Lanahan, D. D., fills very acceptably the place made vacant in our list of chaplains by the resignation of the Rev. Dr. N. B. Smith.

In the hospital year just closed there has been, in a still over a half century, immunity from excessive mortality or epidemic disease, and we may well be devoutly thankful. Hampered as we have been, some good work has been done, and while we have had no violent death, some have gone forth restored. This hospital is a monument to the nation's charity; in the completeness of its appointments, in the wisdom and breadth of its purpose, in the humanity of its care, it is worthy of her, and being such may its support be liberal, and its alms-giving of a great nation.

We are, very respectfully, your obedient servants,

JOS. K. BARNES,

*President of the Board*

W. W. GODDARD,

*Secretary*

Hon. CARL SCHURZ,

*Secretary of the Interior.*



## REPORT OF THE COLUMBIA INSTITUTION FOR THE DEAF AND DUMB.

COLUMBIA INSTITUTION FOR THE DEAF AND DUMB,  
KENDALL GREEN, NEAR WASHINGTON, D. C.,  
October 23, 1879.

SIR: In compliance with the acts of Congress making provision for the support of this institution, we have the honor to report its progress during the year ending June 30, 1879.

## NUMBER OF PUPILS.

The pupils remaining in the institution on the 1st of July, 1878, numbered .....	70
Admitted during the year .....	26
Since admitted.....	22
Total .....	118

Under instruction since July 1, 1878: males, 111; females, 7. Of these, 76 have been in the collegiate department, representing 24 States and the Federal District, and 42 in the primary department. A list of the names of the pupils connected with the institution since July 1, 1878, will be found appended to this report.

## HEALTH OF THE INSTITUTION.

We are happy to be able to record the fact that no death has occurred in the institution during the year. We have had no serious cases of sickness and no epidemic diseases have made their appearance.

## COURSES OF INSTRUCTION.

No essential changes have been made in the ordinary courses of instruction pursued in the several departments of the institution; these remain as described in former reports. Examinations conducted at stated periods have given us evidence of the gratifying fact that the average standard of scholarship throughout the institution reached a higher point during the year now under review than ever before.

## INSTRUCTION IN ARTICULATION.

As was stated in our last annual report, Miss Gordon, who had been for many years an instructor in our primary department, was detailed to the work of teaching articulation. She has devoted her entire time to this branch of instruction, and the results of her labors have been entirely satisfactory. Eight pupils have been under her training, four of whom were born deaf; one became deaf at the age of 18 months; another at the age of 3 years; another at the age of 4½ years. None of these seven pupils possessed any power of speech when they began receiving lessons in articulation. The other member of the class, now 15 years of age, lost his hearing at the age of 11. This pupil possessed the power of speech in an almost perfect degree. The instruction in his case, therefore, was directed to the correction of certain mistakes in pronunciation, to the improvement of the general management of his voice, and to the acquisition of the power of reading from the lips. In all the other cases it was of course necessary to begin with the elements of vocal utterance. Bell's system of visible speech, with the methods recommended therein, has been closely followed.

The progress made by the pupils under Miss Gordon's instruction has

been satisfactory in all cases. No pupil has been dropped on account of inability to improve, and the number receiving instruction in articulation is this year increased to 12.

In our tenth Annual Report were presented the conclusions of the President of the institution, formed after a careful examination of between forty and fifty institutions in Europe. Among these conclusions the opinion was expressed that not more than thirty per cent of the whole number of deaf-mutes could be expected to attain sufficient proficiency in speech to justify the time and expense necessarily incurred in their instruction. Since the report above referred to was made in 1867, quite a number of schools organized especially for instruction in articulation have been maintained in this country, and in many of the older institutions classes in articulation have been successfully carried forward. No results, however, have been obtained which modify the conclusions of twelve years ago with regard to the percentage of deaf-mutes that may be expected to succeed in articulation. In this institution we shall therefore make only such progress as is consistent with the conclusions above referred to, and for the present we shall confine this branch of instruction to the primary department.

#### LECTURES.

For several years courses of lectures on subjects of general interest to the college have been given by the members of its faculty, and have proved entertaining and instructive. Similar lectures have also been delivered to the pupils in the primary department during the past year by the instructors in that department. The importance to the students and pupils of such lectures will be appreciated, when it is remembered that they are necessarily cut off by reason of their deafness from the enjoyment of lectures given to the general public.

The lectures given by the Faculty of the College were as follows:  
*Beauty: Its Influence on Moral and Intellectual Development*; President.

*The Indo-European Family of Languages*; Professor Porter.  
*Dante*; Professor Fay.

*Travels in the East, with illustrations given by the aid of the Magic Lantern*; Professor Chickering.

*Oxygen and certain Oxygen Compounds*; Professor Gordon.

*The Inspiration of Columbus*; Assistant Professor Hotchkiss.

*The Manners, Customs, and Daily Life of the Ancient Romans*; Assistant Professor Draper.

In the primary department the lectures were as follows:

*The Constitution and Government of the United States*; Mr. D.

*The Geographical Zones*; Mr. Ballard.

*Physiology*; Mr. Sparrow.

#### EXERCISES OF PRESENTATION DAY.

The exercises of the regular public anniversary of our college department took place on the 7th day of May, in the chapel of the institution. The President of the United States, in his capacity as president of the institution, occupied the chair. The exercises were opened by prayer by the Rev. John G. Ames, president of the Young Men's Christian Association of the city of Washington.

The candidates for degrees delivered essays as follows:

*Dissertation: Dr. Samuel Johnson*; Jerome Thaddeus Elwell, Pennsylvania.

*Dissertation: The Educational Value of the Natural Sciences; John Albert Prince, Massachusetts.*

*Oration: Our Railroads*; James Joseph Murphy, Wisconsin.

Messrs. Ellwell and Murphy were then presented by the President of the College to the Board of Directors as candidates for the degree of Bachelor of Arts. Mr. Prince was presented as a candidate for the degree of Bachelor of Philosophy.

President Gallaudet then introduced President Porter, of Yale College, who delivered an address, which was given in signs to the deaf portion of the audience by his brother, Professor Porter, of our College Faculty.

Rev. J. J. Bullock, D. D., chaplain of the Senate, then dismissed the audience with the benediction.

At the close of the scholastic year, on the 18th of June, degrees were conferred in accordance with the recommendations of Presentation Day.

From the primary department, Lydia Leitner, of Maryland, and Edgar Graugnard, of Louisiana, were graduated with suitable diplomas.

William A. Tilley, of the District of Columbia; William Brookmire, of Pennsylvania; John A. Starkes, of Virginia, and Edward O. Herr, of Kentucky, were promoted to the collegiate department at the opening of the present term.

All of which is respectfully submitted by order of the Board of Directors.

**EDWARD M. GALLAUDET,**  
*President.*

Hon. C. SCHURZ,  
*Secretary of the Interior.*

## REPORT OF THE FREEDMEN'S HOSPITAL AND ASYLUM.

FREEDMEN'S HOSPITAL,  
Washington, D. C., October 1, 1879.

SIR: I have the honor to present the annual report of the Freedmen's Hospital and Asylum for the fiscal year ending June 30, 1879, as follows:

The whole number of patients in hospital during the year was 904,  
viz:

Remaining in hospital June 30, 1878.....	231
Admitted to hospital during the year, viz:	
Males, white.....	154
Females, white.....	31
Born in hospital, viz: Males, white .....	2
Females, white .....	3
Whole number of white.....	190
Admitted to hospital during the year, viz:	
Males, colored.....	222
Females, colored .....	187
Born in hospital, viz : Males, colored .....	25
Females, colored .....	18
Whole number of colored.....	452
Transient.....	31
Total number admitted, supported, and treated in hospital.....	904

Of the above patients there were discharged cured .....  
 Discharged relieved .....  
 Discharged, transient .....  
 Died .....  
 Still-born .....

Remaining in hospital June 30, 1879 .....

The Colored Orphans' Home and Asylum, containing about 100 children and attendants, has been furnished with medicines during the year. This institution was formerly a part of the hospital.

Besides the above, a large dispensary has been supported for the benefit of the numerous poor who are constantly applying to the hospital for aid. Of these the names of 2,270 have been entered in the hospital records, and about four thousand prescriptions have been written and put up for them.

The nativity of the patients admitted to hospital was as follows:

Virginia .....	221	Scotland .....	1
Maryland .....	122	Vermont .....	1
District of Columbia .....	100	Wales .....	1
Ireland .....	39	West Virginia .....	1
Germany .....	23	Alabama .....	1
New York .....	23	Austria .....	1
Pennsylvania .....	23	Canada .....	1
South Carolina .....	8	Cuba .....	1
North Carolina .....	7	Denmark .....	1
England .....	7	France .....	1
Massachusetts .....	6	Hungary .....	1
Connecticut .....	4	Iowa .....	1
Maine .....	4	Italy .....	1
Missouri .....	4	Kentucky .....	1
New Jersey .....	4	Louisiana .....	1
Ohio .....	4	New Brunswick .....	1
Switzerland .....	2	Rhode Island .....	1
Delaware .....	2	Sweden .....	1
Florida .....	2	Tennessee .....	1
Georgia .....	2	At sea .....	1
Illinois .....	2	Unknown .....	1

The diseases and conditions for which the patients were admitted to hospital and treated in dispensary were as follows:

Disease, &c.	Hospital.	Dispensary.	Disease, &c.
Fracture of skull .....	2	.....	Sciatica .....
Fracture of forearm .....	1	.....	Conjunctivitis .....
Fracture of thigh .....	1	.....	Ophthalmia .....
Fracture of ankle .....	1	.....	Keratitis .....
Compound comminuted fracture of leg .....	2	.....	Amaurosis .....
Dislocation of hip .....	1	.....	Blindness .....
Dislocation of wrist .....	1	.....	Otitis .....
Gunshot wounds .....	7	1	Iritis .....
Incised wounds .....	4	4	Tinea capitis .....
Lacerated wounds .....	1	.....	Herpes .....
Punctured wounds .....	1	.....	Eczema .....
Contused wounds .....	.....	5	Ecthyma .....
Contusions .....	5	28	Lichen .....
Sprains .....	.....	7	Frost-bite .....
Inflammation of knee-joint .....	2	.....	Burns .....
Inflammation of elbow-joint .....	1	.....	Morbus coxarius .....
Convulsions .....	4	10	Caries .....
Chorea .....	.....	1	Aneurism of the aorta .....
			Abscess .....



Disease, &c.	Hospital.	Dispensary.	Disease, &c.	Hospital.	Dispensary.
Lumbar abscess.....	5	1	Hydrothorax.....	2	—
Chronic ulcer.....	11	61	Hæmorrhoids.....	3	8
Anthrax.....	3	—	Fistula in ano.....	3	1
Poison.....	—	1	Prolapsus ani.....	—	1
Whitlow.....	—	1	Inflammation of rectum.....	1	—
Scrofula.....	3	50	Ulceration of rectum.....	1	—
Leprosy.....	1	—	Peritonitis.....	3	1
Cancer.....	7	—	Hernia, inguinal.....	5	2
Marasmus.....	1	—	Hernia, scrotal.....	4	—
Anæmia.....	1	—	Hernia, femoral.....	1	—
Gangrene.....	2	—	Varicocele.....	1	—
Goitre.....	—	2	General dropsy.....	4	—
Onychia.....	1	—	Cardiac dropsy.....	3	—
Syphilis.....	19	49	Renal dropsy.....	4	—
Syphilis, secondary.....	11	20	Albuminuria.....	11	4
Syphilis, tertiary.....	2	—	Uremic poisoning.....	1	—
Bubo.....	1	2	Hydrocele.....	2	—
Acne.....	1	—	Pregnancy.....	51	31
Urticaria.....	—	2	Puerperal condition.....	3	—
Elephantiasis.....	1	—	Metritis.....	2	—
Typhoid fever.....	8	—	Endometritis.....	1	3
Remittent fever.....	8	2	Fibrous tumor.....	2	2
Intermittent fever.....	32	23	Prolapsus uteri.....	2	1
Congestive chill.....	1	—	Hypertrophy of uterus.....	—	3
Erysipelas.....	2	4	Ruptured perineum.....	1	—
Measles.....	1	1	Phthisis pulmonalis.....	59	84
Scarlet fever.....	1	—	Hæmoptysis.....	7	9
Diphtheria.....	—	2	Epistaxis.....	2	2
Varicella.....	1	—	Functional disease of heart.....	3	10
Aphthæ.....	—	11	Valvular disease of heart.....	5	3
Tonsillitis.....	1	90	Hypertrophy of heart.....	1	—
Pharyngitis.....	1	1	Angina pectoris.....	1	—
Dyspepsia.....	5	65	Sunstroke.....	3	—
Gastritis.....	1	1	Meningitis.....	2	—
Colic.....	2	34	Congestion of brain.....	2	—
Diarrhœa, acute.....	6	76	Softening of brain.....	1	—
Diarrhœa, chronic.....	5	9	Apoplexy.....	2	4
Dysentery.....	2	20	Paralysis.....	9	6
Hepatitis.....	2	—	Epilepsy.....	5	3
Constipation.....	1	170	Insanity.....	5	—
Worms.....	—	12	Locomotor ataxia.....	1	16
Gonorrhœa.....	7	62	Cephalalgia.....	—	30
Gleet.....	—	3	Hysteria.....	2	31
Orchitis.....	2	1	Neuralgia.....	7	2
Stricture of urethra.....	2	—	Mammary abscess.....	1	33
Fistula, urethral.....	2	—	Amenorrhœa.....	1	20
Hæmaturia.....	2	1	Leucorrhœa.....	1	11
Suppression of urine.....	—	1	Dysmenorrhœa.....	—	12
Incontinence of urine.....	—	4	Menorrhagia.....	—	3
Diuresis.....	—	1	Vaginitis.....	1	—
Chronic cystitis.....	1	—	Cancer of uterus.....	1	—
Paraphimosis.....	—	1	Born.....	48	—
Rheumatism.....	46	211	Infancy.....	8	—
Rheumatism, syphilitic.....	3	—	Tongue-tie.....	—	4
Aphonia.....	—	1	Dentition.....	1	75
Asthma.....	2	12	Teeth extracted.....	—	—
Catarrh.....	1	107	Senile debility.....	9	95
Laryngitis.....	1	1	General debility.....	—	—
Croup.....	—	3	Convalescent.....	13	—
Bronchitis, acute.....	15	130	Deformity.....	3	—
Bronchitis, chronic.....	4	29	Curvature of spine.....	—	1
Pneumonia.....	11	3	Malingering.....	1	—
Pleurisy.....	8	34			
Pleurodynia.....	2	12			
			Total.....	642	2,270

The following table shows the number of cases of each disease resulted fatally :

Disease.	White.	Colored.	Total.	Disease.	White.
Phthisis pulmonalis...	4	36	40	Caries of knee-joint, ankle, and sternum.	.....
Carbuncle on neck and head.....	1	.....	1	Chronic cystitis.....	.....
Senile debility.....	.....	17	17	Chronic laryngitis.....	1
General dropsy.....	.....	7	7	Compression of brain.....	.....
Cardiac dropsy.....	.....	4	4	Congestion of brain.....	.....
Renal dropsy.....	.....	3	3	Congenital debility.....	.....
Paralysis.....	.....	2	2	Dysentery.....	.....
General paralysis.....	.....	6	6	Embolism.....	.....
Apoplexy.....	.....	5	5	Hæmophilia.....	.....
Tetanus.....	.....	3	3	Hæmoptysis.....	.....
Softening of brain.....	.....	3	3	Hydrothorax.....	1
Albuminuria.....	.....	3	3	Nephritis.....	.....
Pneumonia.....	.....	2	2	Pelvic abscess.....	1
Pleuro-pneumonia.....	.....	2	2	Peritonitis.....	.....
Typhoid-pneumonia.....	.....	1	1	Psoas abscess.....	.....
Meningitis.....	.....	2	2	Pyæmia.....	.....
Fibrous tumors.....	.....	2	2	Senile gangrene of left foot.....	.....
Chronic diarrhoea.....	.....	2	2	Strangulated hernia.....	.....
Passive congestion of lungs.....	.....	2	2	Typhoid fever.....	.....
Gangrene of lungs.....	.....	1	1	Hypertrophy of heart.....	.....
Cancer of womb.....	.....	1	1	Abscesses of sternum and axilla.....	.....
Cancer of vagina and uterus.....	.....	1	1	Anæmia.....	.....
Cancer of stomach.....	.....	2	2	Angina pectoris.....	.....
Cancer of left breast and left axilla.....	.....	1	1	Valvular disease of heart.....	.....
Caries of pelvis.....	.....	1	1	Uremic poison.....	.....
Caries of pelvis and hip-joint.....	.....	1	1	Total.....	8

The following table shows the number of married and women who gave birth to children in hospital during the year

	White.	Colored.
Married.....	2	.....
Unmarried.....	3	.....
	5	.....

Besides numerous minor surgical operations, the following important operations were performed :

Amputation of thigh.....	1	Operation for removing cancer.....
Amputation of leg.....	3	Tapping for hydrocele.....
Amputation of foot.....	2	Tapping for abdominal dropsy.....
Amputation of arm.....	2	Operation for removing cancer.....
Operation for strangulated hernia.....	2	

The severity of the cases admitted to hospital may be inferred from the fact that four died on the day of admission, nine died on the second day after admission, and four on the third day. A glance at

of diseases which proved fatal will show that most of the deaths resulted from incurable diseases and conditions, such as consumption, senile debility, cardiac and renal dropsy, and paralysis.

The proportion of still-births this year is much less than in any former year, and the evidence of attempts at abortion is also correspondingly less.

It will be observed that in 39 of the 48 cases of confinement the mothers were not married; of these, 24 were first confinements, and 15 were second confinements. There is very little chagrin or mortification on the part of these mothers, and yet they are far from being abandoned and dissolute. There is no law in the District to reach them, nor are the partners of their guilt amenable to law—a circumstance very much to be deplored.

Religious exercises and chaplain services have been performed by theological students, licentiate preachers, who receive their board for their services.

All the articles of clothing and bedding used in the hospital, except shoes, hats, hose, coats, and blankets, are manufactured on the premises at a slight advance from the cost of the raw material.

The appropriation for the support of this hospital for the fiscal year ending June 30, 1879, was \$40,500.

The morning report shows that 81,229 days of support have been afforded to patients during the year. Without the rent, this makes the daily cost of each patient for subsistence, medicines, nursing, and clothing about 45 cents per day.

It is believed that no governmental or eleemosynary institution in the District affords so good care and treatment, for the amount expended, as this hospital.

As evidence that the patients are well cared for here, I cite the fact that most of them, white and colored, when cured leave the hospital with reluctance, and most of those who have once been treated here, when again overtaken by accident or disease, apply a second, third, fourth, and even a fifth time for admission.

The necessity for the continuance of this hospital is manifest from the constantly increasing number of applications for the admission of persons suffering from accidents, from wounds, and from severe diseases. The number of admissions this year exceeds that of any former year by 123.

Not less than 175 have come in here during the year by recommendation of the police. In fact, this is the only general hospital, for the reception of all classes of patients, within the District. Many of the patients are non-residents, and must be provided for somewhere by the general government when they fall sick in this city. The location of the hospital is central and healthy. Not a case of original malarial disease has been known to occur within the premises since they have been occupied for their present purposes, and only one case of typhoid fever.

Very respectfully, your obedient servant,

G. S. PALMER, M. D.,  
*Surgeon-in-Chief.*

Hon. CARL SCHURZ,  
*Secretary of the Interior, Washington.*

# REPORT OF THE COLUMBIA HOSPITAL FOR WOMEN LYING-IN ASYLUM.

COLUMBIA HOSPITAL FOR WOMEN  
AND LYING-IN ASYLUM  
Washington, D. C., October

**SIR:** The Board of Directors of the Columbia Hospital for Women and Lying-in Asylum beg leave to transmit the thirteenth annual report of that institution for the fiscal year ending June 30, 1879.

As will be seen from the accompanying reports, much has been accomplished during that period. The mortality rate has been extremely low, one adult death only being mentioned in the report of the year in charge, and during a period of two consecutive years the mortality has been but one-third of one per cent. To maintain such a condition of affairs the board feel compelled to again urge the necessity for the erection of isolated cottages, where those suffering from puerperal contagion can be removed, and where other afflicted women can be accommodated whose condition prevents their admission to general hospital. Special facilities for their proper treatment. Many such admissions have been made here, but the danger that arises to other patients in the building prohibits their being received; whereas, if the proper isolation could be obtained their lives would be rendered at least comfortable, and the comforts of a home afforded them.

The decreased appropriations during the past year have caused the most rigid economy in expenditure; and where retrenchment was made without deprivation to the patients, the Board of Directors feel compelled to enforce it and to curtail all expenses not indispensable to the proper maintenance of the hospital.

Out of the fund derived from pay-patients a laundry has been established and other necessary improvements completed which could not have been made for out of the general appropriation. In conclusion, the Board of Directors return their thanks to the officers of the hospital, to the medical and consulting physicians and surgeons, and to the lady visitors whose kindly interest has been felt during the fiscal year just closed.

CHAS. H. CRAGIN, M.D.,  
J. K. BARNES,

*Committee on Annual Report.*

Hon. CARL SCHURZ,  
*Secretary of the Interior.*

*To the Board of Directors  
Columbia Hospital for Women and Lying-in Asylum:*

**GENTLEMEN:** I have the honor to submit for your consideration the annual report of the Columbia Hospital for Women and Lying-in Asylum for the fiscal year ending June 30, 1879.

It is with much satisfaction that I again record but a single adult death during the year just closed. That death is attributable to pulmonary congestion and removal of an ovarian tumor from a patient fifty-four years of age, who was one of extreme debility incident to the disease under which she labored for many years, and her persistent refusal to permit operative interference until death was den and suffocation imminent. By the advice of the consulting board of medical and surgeons, the patient being willing to submit to anything that might be deemed necessary to perform ovariotomy. Death did not occur until the day, though congestion of the lungs had set in, owing to the debility of the woman prior to the operation, and the consequent failure to obtain sufficient heart force to carry on the circulation.

There were many and firm adhesions of the growth to the surrounding



a variety of complications, rendering the operation extremely difficult, and decreasing in proportion the chances of recovery.

Under these circumstances life was unusually prolonged, and I have no doubt that, had the operation been undertaken at an earlier time in the history of the disease, the woman's life might have been spared.

It may not be amiss at this time to call attention to the fact that during the fiscal year ending June 30, 1878, 294 patients were treated in the hospital, of whom one died. During the past fiscal year the number reached 299, while again one death is recorded. Thus it will be seen that in the treatment of 593 patients, and considering a period of two years' duration, we have to report the loss of two patients, a mortality rate of about one-third of one per cent.

This percentage seems worthy of comment when it is remembered that during the time specified there have been 223 cases of delivery, many of them attended with complications the most difficult met with in obstetrical practice, and yet not a single maternal death has to be noted in the lying-in department of this hospital for more than two years.

There were 40 surgical operations, embracing most of the lesions which require operative interference in the special branch for the treatment of which this hospital is intended, and in no case did a fatal result occur as the immediate effect of the operation.

The out-door department still continues to afford relief to a large number of poor women who, unable to pay for the services of a physician at their own homes, are compelled to seek assistance where medical aid and attention can be furnished them gratuitously. The accompanying synopsis appended to this report explains the number treated and the results.

The addition of the laundry to the main building has supplied a want long felt, and increased the facilities for the accommodation of patients.

Our provision for heating the building, insufficient before the erection of the Mansard roof, has now become entirely inadequate, and as a consequence much inconvenience and discomfort are experienced during the winter months. I trust that some means may be devised to remedy this defect before the cold weather sets in.

I would also suggest to your honorable body that a tank be placed in the upper portion of the building in order to secure a supply of water in the "white lying-in ward," as it frequently happens that during the greater portion of the day in the summer months no water reaches the upper story.

The sanitary condition of the hospital, owing to the untiring zeal of the matron and nurses, has been all that could be desired, and general satisfaction has been expressed by every patient admitted during the year.

In compliance with chapter xi, section 7, of the by-laws, Mr. Charles Earle has been appointed to fill the vacancy caused by the resignation of Dr. Pool, my late assistant in the hospital and dispensary, to whose strict attention to duty and careful watching much of the success attending my labors in this hospital for the past two years is largely due.

In submitting this my second annual report to the board of directors, I cannot forbear expressing my entire satisfaction in the evidence here given of the progressive and improving condition of the hospital. In the management of its affairs, which the board has seen fit to intrust to me, I have conscientiously striven to gain the best possible results as regards hygiene, treatment of the sick, and economical expenditure, and I feel assured that the hospital is now entering upon a period of success and usefulness which cannot be other than gratifying to those who have watched over its interests for so many years.

I am under many and increasing obligations to the board of advisory physicians and surgeons, and take this occasion to return my most sincere thanks for the valuable advice and assistance which has been at all times so cheerfully given.

I also beg to state that the property under my care, except such as has been used for the benefit of the hospital and dispensary, is in good condition. Little has been added to the stock on hand at the end of the last fiscal year, which was examined and approved by the "Committee on Personal Property," and no purchase has been made during the present fiscal year unless imperatively demanded by the wants of the hospital.

Respectfully, your obedient servant,

P. J. MURPHY.

*Resident Physician and Surgeon in Charge.*

Patients in hospital July 1, 1878 .....	19
Number admitted during the year .....	280
Total number treated during the year ending June 30, 1879 .....	299
Discharged during year .....	272
Remaining in hospital July 1, 1879 .....	27
Number of prescriptions compounded .....	1,500

The results were as follows :

*Obstetrical cases.*

Delivered before June 30, 1878, but still in house at that date.....  
 Delivered during the year ending June 30, 1879.....  
 Left before delivery.....  
 Remaining in house undelivered July 1, 1879.....

Total .....

Maternal mortality.....  
 Cases of twins.....  
 Forceps deliveries.....  
 Adherent placenta.....  
 Post-partum convulsions.....  
 Post-partum hemorrhage.....  
 Still-births.....

Of the cases of still-births, 1 was admitted advanced in second stage lapsed funis; 1 was premature; 1 was an acephalous monstrosity. In 1 was not determined, and in 3 there was marked fatty degeneration of the

*Report of Columbia Hospital Dispensary for fiscal year ending June 30,*

Number of patients under treatment at date of last report.....  
 Number of patients received during year.....  
 Whole number treated during year.....  
 Number cured.....  
 Number relieved.....  
 Number died.....  
 Result unknown.....  
 Number sent to hospital.....  
 Number of prescriptions compounded during the year.....  
 Number under treatment at date of this report.....

	Diseases of females	
	Hospital.	Dispensary.
Number of patients under treatment at date of last report .....	19	2
Number of patients received during year.....	280	39
Whole number treated during year .....	299	41
Number cured.....	203	15
Number relieved .....	40	9
Number died.....	1	6
Result unknown .....	28	6
Number sent to hospital.....	1,500	84
Number of prescriptions compounded during the year.....	27	3
Number under treatment at date of this report .....		

**REPORT OF GOVERNMENT DIRECTORS OF THE  
 PACIFIC RAILROAD COMPANY.**

WASHINGTON, D. C., *December*

SIR: The government directors of the Union Pacific Railroad Company made their annual inspection, including road-bed, rolling-mill, and accounts, in the month of August. A member of the board was not present, but he made a separation of the road in October.

From the 1st day of July, 1862, when the act of Congress incorporating the Union Pacific Railroad Company, up to the 1st of May, 1878, when the Pacific Railroad "funding bill" became a

has been continual conflict between the company and the United States Government. The point in dispute has been in what way, at what times, and in what sums the debt to the government should be paid. The funding bill settles these questions, and declares that the company shall pay \$800,000 annually to the government, in addition to one-half the earnings on government account, or a sum which added to such half would equal 25 per cent. of net earnings, all to establish a sinking-fund with which to pay, at its maturity, this whole indebtedness. A question arose as to the constitutionality of this act, and it came before the Supreme Court of the United States for decision. The court has declared that the act is constitutional, and this report will therefore not refer again to these differences.

It will be confided to the condition of the road during the last year, and to a consideration of the question whether the security of the government for its loan of \$27,235,512 is greater or less than it was one year ago; whether any competing lines of railroad are likely to be built, and, if built, will decrease the value of this road, and thus decrease the safety of the loan; and also how far the government should control the affairs of the road and feeding lines, and whether the present policy of the company is likely to increase or diminish the government's security.

We find improvements in the road-bed at various points. In many places, where the track is exposed to drifting snows, the bed has been raised. This work is to be continued as fast as possible, until all parts of the track are high enough to be clear from drifts. This must be done gradually. East of Cheyenne twenty-six places can be counted where one year ago were small bridges. These have been taken out and their room filled with soil. Where solid earth can properly be put in the place of a bridge, there can be but one opinion as to the wisdom of the change.

New cross-ties are visible at short distances throughout the road; the books of the company declare that 331,483 new ties were laid between January 1 and September 30, 1879. Of these, 61,212 were of oak, 224,883 of pine, and 45,284 of cedar. The ties are purposely laid with their ends out of line, thus affording a broader distribution of pressure. On the Central Pacific, on one side of the track, the ends lie even, and in many places on both sides. Experts differ as to the respective advantages of these two methods.

There is a marked improvement in the track. The policy of the company in the renewal of its track with steel rails has been changed. Last year an annual renewal of one-tenth was thought adequate. Our report then rendered criticised the latter policy. Fifteen thousand five hundred and twenty-six tons of steel rail have been laid on the western half of the road, and 4,474 tons are to be laid before the 1st day of January next, making 20,000 tons in all, equal to about 228 miles of track the present year. This will give 511 miles of steel rails of good quality in the main track, or about half the line. These rails were purchased by advice of President Dillon, more than a year ago, at the low rate of \$48 per ton delivered at Omaha. More steel rails have been laid the present year than in any year before.

Twenty thousand tons more of steel rails have been purchased or contracted for at the date of this report, and will be laid next year. The road will then have about 739 miles of single-track steel rails—about three-quarters of its length. The eastern half is as yet mainly iron. The government directors have had no opportunity to test the quality of these steel rails.

Portions of the iron rails are badly worn, and these are being gradually replaced. It is remarkable that some of the old iron rail known

as the "Cambria" rail, made at Johnstown, Pa., now in use after years of wear, is as good as the average new iron rail. The miles of this rail between Ogden and Cheyenne. Nearly all are laid with square joints and on the cross-ties. This, together with a low rate of speed, makes it one of the easiest-riding roads; and with broken or lap joints is apt to give a rolling and unpleasant ride.

The Union Pacific, like all the other great lines west of the Missouri River, is, strictly speaking, a single track road. The low rate of speed, the infrequency of local trains, and the free use of the main line, enables a single track to do the work of a double one with nearly equal safety. Members of the board walked over portions of the track found in places here and there, east of Cheyenne, on the main line, where the "Cambria" iron rails which have been cut and relaid, less than 100 feet in length; no such places were found on the western half of the line.

The rolling-stock is in good condition. Perhaps this is in part because it is rarely permitted to leave the road. Neither freight, passenger, nor locomotives come east of Council Bluffs. At that place freight and passenger cars nearly all change cars. The rule is a good one. The rolling-stock receives better care at home than can be expected at the hands of strangers.

The rolling-stock consists of 179 locomotives, 165 passenger-cars and sleeping-cars, and 3,216 freight-cars. The increase of freight business, especially during the latter half of 1879, has made it necessary to have more cars; over 100 new stock-cars have been ordered and are now building, in part, at the shops of the company at Omaha; also 100 flat cars and 150 box-cars.

The books show that ten new engines, all 10-wheelers of uniform pattern, made at Taunton, Mass., have been put on the road since the beginning of the year. The economy of uniform engines, whose pieces are interchangeable, is evident; the parts can be kept in store and ready for use. The new engines of the best kind have been contracted for at the end of the year of last year and will soon be running. If bought at present prices they would cost probably \$70,000 more. Seventy-two engines have been ordered with air-brakes. These are a marked addition to the comfort of travel.

One new car, for a special purpose, unique in its design, has been ordered at the company's shops at Omaha. It is a cattle-car, so arranged that at short intervals, in hot weather, cold water can be forced into pipes pierced with minute holes laid along and under the car and sprayed upon the cattle below. The utility of this device is to be tested. It cost about \$550. In the long ride from Julesburg, Ogallala, and other points from which the largest quantities of cattle are shipped, such cars, it is hoped, can be used with great advantage.

Ordinarily the company is able to build all its own rolling-stock, except engines, at the Omaha shops. Here it does its own silversmithing, its upholstering, and in fact nearly all of its mechanical work, that which belongs to the rolling-mill at Laramie, and to the road at Rawlins. All passenger-cars have the Miller coupler and the Westinghouse air-brake; the company own these rights in the West.

Many new water-tanks have been put up or the old ones repaired since last year. These are mounted on iron columns, and are fire-proof and nearly fire-proof; the supports of the old tanks were of wood and unsafe. New tanks of a similar kind will be placed along the remainder of the road. The company are making great improvements and additions to the water supply, not only at water-stations but at other points. At Rawlins a 4-inch pipe is being laid from the spring which will supply 55,000 gallons of water per day;



here at present, which is drawn from another spring, does not exceed 25,000 gallons per day in dry times, and 55,000 gallons in the rainy season.

Great improvements have been made in a number of the station-houses during the year. Some of the remaining ones might be replaced by others larger and more commodious, and more in keeping with the growth of the communities immediately surrounding them. The less frequented ones are as yet ample.

The new depot at Council Bluffs deserves special notice. All east and west bound passengers change cars at this station; the rooms for reception and for offices are large and convenient. The upper stories are used for hotel purposes and afford a revenue. Six lines of road find a station here common to all. The Chicago, Rock Island & Pacific, the Northwestern, the Chicago, Burlington & Quincy, the Sioux City & Pacific, the Kansas City & Saint Joseph, and the Wabash, Saint Louis & Pacific, all contribute to the support of this station by the payment of annual rental to the Union Pacific.

There are two stock-yards connected with the road. One of them at Omaha, having a capacity to feed and water 2,000 head of cattle daily, and the other at Council Bluffs, with a capacity to feed and water 7,000 daily. The yards at Omaha are managed by private enterprise; they are convenient; and, with the great increase in the cattle trade, they will keep their share of business. The yards at Council Bluffs have been lately built. They are located so that they can be extended, from time to time, to meet increasing demands.

More attention should be given to the care of cattle *in transitu*, both for the sake of humanity and to preserve the quality of the beef until it reaches a market.

The rolling-mill at Laramie is complete in its arrangements. Here the company replace their worn-out iron at one-third less cost than they could under contract. Nearly all narrow or standard gauge rails used on the branch lines are rolled here. The company are now building a "merchant bar" mill attached to the rolling-mill, and the two are to be operated together. Here is utilized the scrap iron. Fastenings for rails and all small irons used on the road are made here. The economy and skill displayed in the conduct of these works are worthy of notice.

The ability displayed, and the interest taken in the business of the company by subordinates, deserve commendation. Most of these persons have been many years employed on the road, and some have risen from the lowest to the highest places. The principles upon which the civil-service regulations are founded are in operation. Promotion by merit is the rule. No new comer is appointed to any place when a suitable person, lower in the ranks, can be found to fill it. The same rule is in force on the Central Pacific, with this addition, that the applicant for any place, except, perhaps, of the lowest grade, must be able to receive and send messages by telegraph. The wires seem almost as necessary to these roads as are the rails.

During the last year three wrought-iron truss-span bridges, of 150 feet each, have been built, viz, the Loup Fork, Fort Steele, and North Platte bridges. Eight wrought-iron truss-bridges are now in course of construction. Six of these are 150 feet in length, and two of them 125. The abutments have been put in good condition. Thirty pile bridges, 1,300 feet in all, have been rebuilt with oak, cypress, and cedar. In the trestle-and-pile bridges at Bitter Creek, Black's Fork, Big Muddy and Yellow Creeks, and in the principal pile bridges in Weber and Echo Canions, the old stringers have been replaced with new ones.

All new stations are built on the south side of the road. eddies and drifts, and blocks the track near stations on the north side.

The increase from the coal traffic can only be measured by the settlement of the country along the main line, its branches and connecting lines. A coking-furnace has been erected by the company at Omaha, where experiments in coking the coal of the country are being made. No practical result has yet been reached.

During the last year the Kansas Pacific Railway has passed under the control of this company. Both roads have the same general manager and the same superintendent of telegraphs.

The increase of cattle traffic from the west has been nearly 50 per cent. Up to November 6, 1878, 4,082 car-loads of cattle were shipped from Omaha and Council Bluffs, and up to November 6, 1879, 6,162 loads had been delivered, an increase of 1,612. The total number of cars of cattle received at Omaha and Council Bluffs during the year 1878 was 4,780, and the total number for this year will be at least 6,000. The exact figures cannot be ascertained at the time of writing. The exact number of loads of hogs and sheep delivered at the same stations during the past year be now given. The accounts are not yet closed, but judging from those received it is safe to say that these of 1879 will exceed those of 1878 by at least 50 per cent.

The cattle trade of the Union Pacific is increasing rapidly, and its share of the earnings of the road is derived therefrom. This cannot be taken from it. Probably there is no part of the Union Pacific more adapted to raising cattle than the territory lying between Council Bluffs and the North Platte. The largest cattle dealers say that they can care for themselves the year round. Since the settlement of the country there has been no winter when they have not found food and shelter. Large tracts of bunch grass are left bare by the action of the snow. Five per cent. will cover the loss from inclemency. To these lands young cattle are driven from Texas and sold at \$9.50 per head. One year's growth adds at least \$6 to the value, and the second year about the same. Cattle thrive wonderfully on this grass. Buyers of Texas cattle can brand their stock and sell it or may herd them with the droves of large dealers, who charge \$1.00 per head a year for the service. In two years these cattle are sold to the Eastern market, and will be delivered by the dealers or by the owner, and, if it is desired, sold for account of the owner. The cattle business appears to be very profitable and yet in its infancy. On November 6, 1879, 241 car-loads of cattle were shipped on this road.

A considerable portion of the cattle arriving at Omaha and Council Bluffs are distributed through the rich farming regions of Nebraska and of Iowa. Here the farmers find greater profit in feeding their corn through the winter than in marketing it. In the winter the cattle may be said to carry the corn to market. It saves the farmer the expense of the feed. The business of thus feeding corn has more than doubled since last year.

The company does all express business on the main line and on all other lines directly controlled by it. The economy of this business is great. Every employé becomes an express agent without extra pay. The profits from this business are now over \$40,000 monthly. It is probable, that, with the large extension of feeding lines and the general increase of the express business, the income from this source will, in time, nearly pay the annual interest on the bonded debt. The roads have farmed out this business when the profits from it were small, and pay a fair dividend—a fact suggestive of some irregularity in the management.



administration. The entire cost of managing the express business of the Union Pacific Railroad does not exceed, say, 12 per cent. of its express receipts. A superintendent and a few clerks and messengers are all the extra help required. Millions of dollars yearly which should form a part of the income of railroads are drawn off by express companies. As commonly begun, these companies have their origin in combinations made with railroads, upon terms more or less occult or corrupt. Persons who stood in the place of guardians of the interests of stockholders struck hands with express companies, to the great and increasing detriment of the roads. No one, it is true, foresaw the present magnitude of the express business throughout the country, or supposed that it would absorb the largest and best part of railroad profits. In the very nature of things the same business can be done more cheaply by the roads themselves. Where contracts between express companies and railroads are still in force, and can be terminated only on notice, steps should be taken to terminate them. Where the contract is of a more permanent kind, railroads should, by purchase, control all express business over them.

The directors learn that there is no arrangement between this road and the Atlantic and Pacific Steamship Companies as to subsidies, except the *per capita* subsidy of \$5, which existed at the date of the last report. The railroads and these companies are working together harmoniously. In competitive business the traffic on the Union Pacific, the Kansas Pacific, and the Burlington and Missouri River Road in Nebraska, is pooled. The road which performs the service deducts 40 per cent. for operating expenses, and the balance is divided in agreed percentages. This arrangement prevents ruinous competition, and seems, so far, to work satisfactorily. The same general plan is adopted in Colorado, as between the Union Pacific, the Atchison, Topeka and Santa Fé, and Kansas Pacific Roads.

In its relations with this road, the first duty of the government is to see that no harm comes to its own interests. Its next duty is, not so much to concern itself in the administration of the road, as it is to foster educational and other interests along the line, and promote the growth of feeding lines, at least until the debt to the government has been paid. A traveler cannot conceal surprise at seeing that one of the largest and finest buildings, at each important place on the road, is a public school-house. He is again surprised to learn that in most instances the Union Pacific Railroad Company has given the largest share of the cost. In one instance, only two persons besides this corporation were taxed to erect the building. The government directors suggest that the government can, with propriety, set aside a small percentage of the proceeds of its lands along the line of the road to be used for building school-houses, or for other fixed school purposes in the various townships, always upon the condition that a like sum shall be first given by the township. Encouragement of this kind, to strengthen the government security, is far-sighted. In this way settlers are attracted and the interests of the government are still further protected. Perhaps, also, a little aid of this kind might help to diminish the size of some school districts, one of which at least is thirty miles long, an unreasonable distance for a walk to school.

Perhaps one of the most important means in the hands of the government by which it could add to the security of its generous loan, is to promote foreign emigration to the rich farming and grazing lands adjacent. This can be done through its accredited agents abroad, who should be authorized, when asked for information, to give it fully, and consuls should be supplied with printed details in various tongues. No special

inducements to emigrate should be held out. Only facts should be stated and such a course would not be at variance with the comity of nations.

During the year ending November 1, 1879, the company sold 220,781  $\frac{1}{100}$  acres of land for \$936,443.70. Emigration to lands along the line of the road is very large and in excess of last year. Agents in Sweden and Norway and elsewhere abroad, who have been employed by the company to give correct information to persons desiring to emigrate. In Sweden and Norway many thousands are anxious to leave their homes on or near this line and other Western roads. The farms have, from generation to generation, been cut up and divided among sons and daughters, until the portions are now too small to be again divided.

After careful consideration the directors do not recommend a course which would give all lands on one side of the road to the company and leave the government all on the other side. Such a course would lead to endless confusion. Titles are settled and locations have been made according to the present arrangement; besides, either the government or the company would almost certainly suffer injury by a redistribution. As now the good lands and bad lands are shared about alike. The company is now making great efforts to secure immigration, and to those who wish to examine or purchase, they offer great inducements in the way of transportation, low prices, and liberal terms of payment.

The road is in a prosperous condition, and promises this year gross earnings of over thirteen and a half million dollars, with all expenses reduced to about forty-two per cent. of earnings. If the company can, in our opinion, pay its bondholders their interest and comply with the directions of the funding bill, which sets apart five per cent. of its net earnings, and still leave stockholders a dividend of a half per cent. Quarterly dividends of one and a half per cent. have already been made.

Only brief reference can be made here to the climatic changes now taking place along the line. There has been a general increase in rainfall during the past few years. The line of separation between the arid and the humid regions adapted to general farming and to grazing only is constantly moving westward. Lands are now producing fine crops of small grain, wheat, corn, and other crops, that eight or ten years ago were included in the grazing regions. Grasses that formerly cured upon the stalk now grow until the September or October frosts. In Eastern Oregon the rains are heavier, *i. e.*, there are more rainy days and more frequent showers than formerly, and the rains continue later in the season. In sections of country can be named where, from greater rainfall and the consequent increase in the volume of the bordering streams, lands which years ago were excellent farms have become almost untillable for agriculture and drainage.

Exact figures showing the large increase from freight and passenger traffic and other statistics referring to the business of the road are given in the appendix to this report. It is enough to say that the increase from freights for the year ending September 30, 1879, exceeded 4  $\frac{5}{100}$  per cent., or, say, \$388,245.26.

The policy of the company has been to foster its branches and to become self-sustaining. This is good policy, since, for example, through traffic with points on the Utah and Northern, it gives the Pacific a haul over the entire line. Large shipments that formerly went via the Missouri River to Fort Benton and were distributed from there by transportation from that point are now distributed from the terminal station of the Utah and Northern.



The company leased in March last the Colorado Central Railroad for a term of fifty years and guaranteed that thirty-five per cent. of the gross earnings should be applied upon the securities of the road. This leaves sixty-five per cent. to equip, maintain, and operate the road.

In order to give a concise view of the feeding lines directly connected with the Union Pacific Railroad, or in which it is interested, or whose building is contemplated, a brief description of them furnished to the directors by Mr. S. H. H. Clark, the general manager, is placed in the appendix.

It has been suggested that in view of the contingency of the branch or feeding lines becoming connected with other main lines of railway, and thus diverting their own business from the Union Pacific, it may be good policy for the government to invest the sinking fund in first-mortgage bonds of these branch lines, bearing seven per cent. interest, if satisfactorily guaranteed by the Union Pacific, and thus secure to the latter the business of said lines until the debt to the government is paid.

NATHANIEL NILES.

GEORGE B. SMYTH.

R. P. BUCKLAND.

CHARLES C. HOUSEL.

DANIEL CHADWICK.

To the Hon. CARL SCHURZ,  
*Secretary of the Interior, Washington, D. C.*

**A STATEMENT OF FEEDING LINES OF RAILROAD BUILT OR PROJECTED AND CONNECTING WITH THE UNION PACIFIC RAILROAD, FURNISHED BY MR. S. H. H. CLARK, GENERAL MANAGER OF THE UNION PACIFIC RAILROAD.**

*The Omaha and Republican Valley Railroad* runs from Valley Station, 35 miles from Omaha, on Union Pacific Railroad, westwardly through Saunders and Butler Counties to Osceola, county seat of Polk County, 85 miles. The counties named are three of the richest and best agricultural counties in Nebraska, and since the opening of the Omaha and Republican Valley line are rapidly filling up with settlers. From Valparaiso, 38 miles from Valley, the Lincoln branch is being built through a rich valley, about 22 miles, to the State capital, and thence to Beatrice, 36 miles farther. The construction of this branch will not only put the Omaha and Republican Valley line in direct connection with those centering at the State capital, but will give the main line of the Union Pacific an outlet for travel and freight in that direction and open up a market for its western coal. A branch of the Omaha and Republican Valley is also being constructed from Osceola west to Stromsburg, 6 miles.

*The Omaha, Niobrara and Black Hills Railroad* is being constructed from Jackson, 99 miles west of Omaha, northward through Platte and Madison Counties, and will be completed to Norfolk, 47 miles north of Jackson, this year. A branch of this line is also being extended from Lost Creek, 7 miles north of Jackson, westward to Genoa, 12 miles. The Omaha, Niobrara and Black Hills line is projected to O'Neill City, near the northern boundary of Nebraska. It will open up nearly a dozen large and fertile counties in the Elkhorn, North Loup, and Niobrara regions, and will command the trade of the great stock-raising sections north and northwest of these, in Southern Dakota—the latter a field practically unoccupied by transportation lines; while, as its name would indicate, the ultimate object of this line is the Black Hills mining region. The character of the country it traverses guarantees for it a greater local traffic than could be offered a railroad going to the Black Hills by any other route; lumber, coal, and miscellaneous supplies northward, and live stock, grain, wool, &c., southward, will be leading articles of traffic for the immediate future.

*The Hastings and Grand Island Railroad* extends southward from Grand Island, on the Union Pacific Railroad, to Hastings, 27 miles, there connecting with the Saint Joseph and Western Railroad (formerly the Saint Joseph and Denver City Railroad), and with the latter forming a through line from Grand Island to Saint Joseph, Mo., 227 miles. This line traverses much of the famous Blue River region, a gently rolling, well watered, and exceptionally fertile country, passing through Kearney, Adams,

Clay, Thayer, and Jefferson Counties, Nebraska, and Washington, Marshall, and Brown Counties, Kansas. This entire region is rapidly filling up with a new class of citizens. The development, therefore, in progress along the route will furnish it a heavy local traffic, and with its eastern terminus at Saint Joseph, it will gather much through west-bound business, which centers there and at a number of Missouri River points. This line will intersect the Omaha and Republican River road in the latter's ultimate march southward to Marysville, Kans.

*The Utah Central and Utah Southern Railroads.*—The Utah Central runs from Ogden on the Union Pacific to Salt Lake City, 36 miles, there connecting with the Utah Southern. The latter extends in a generally southward course through the most fertile and thickly populated sections of Salt Lake and Utah Lake country, to Junction, 12 miles south of Salt Lake City, it is joined by the Bingham Canyon Camp Floyd Narrow-Gauge Railroad, extending westward 20 miles to Bingham, the center of a very rich and extensive gold and silver quartz and placer mining district. About 100,000,000 pounds of ore are received at Junction annually from the Bingham feeder. At Sandy, 13 miles south of Salt Lake City, the Wahsatch and Jordan Valley Railroad, also a narrow gauge, turns eastward, penetrating and draining the little Cottonwood mining district, 20 miles distant, and proving a very valuable arm of the Utah Southern at Springville, 53 miles south of Salt Lake City. The Utah and Pleasant Valley narrow-gauge line turns southeast ward and connects with the Pleasant Valley coal mines, 56 miles distant. These connections, being under control of the Utah Southern, hand down from rich mineral districts to the mountains a very large portion of its business. The Utah Southern runs from Provo to Juab, 105 miles south of Salt Lake City. Here is the initial point of the Utah Southern Extension." The latter is completed to Deseret, 52 miles south of Provo, or 157 miles south of Salt Lake City, and is to be completed to the Frenchman's Butte silver-mining district, 75 miles south of Deseret, early in 1880. From Provo it is projected to the Leeds silver mines, about 100 miles farther south and west of the southern boundary. There is hardly a mile of the Utah Southern line that does not traverse a good agricultural and stock-raising country. It renders easily accessible many points a vast mineral region, which extends almost continuously 150 miles from it in the Wahsatch Range on the east. Rich mines, whose ores are of such a nature that they must be shipped, are also clustered closely along it at several points on the west. Iron ores, shipped in large quantities to Salt Lake smelters, are found in apparent inexhaustible quantities near Santaquin, a station 70 miles south of Salt Lake City. The Horn mines, as well as the mines of Leeds district, extend southward, already give the road much business, and it is confidently expected that the former, with the various interests clustered about it and stimulated by the road, alone pay the road's operating expenses in the near future. Southeastern Utah and Northern Arizona are also developing some good mineral districts, which will soon make an exhibit in the business of the road. There is an unusually rich agricultural field for tourists along this line which must soon command extensive views of the grandeur of American Fork Cañon, the beauty of Utah Lake and its shores, and the stupendous wonders of the Great Gorge of the Colorado, all easily reached from the line, have a fame that will become world-wide. It should also be mentioned that the valleys of Southern Utah are the only ones in our great interior where the fruit which will readily produce such semi-tropical fruits, as figs, almonds, etc., has already been exported from them to some extent.

*The Utah and Northern Railway (narrow gauge)* stretches northward from Salt Lake City through Northern Utah, entirely across Eastern Idaho, and is at this date nearly completed to Beaver Cañon, near the Southern Montana boundary, 274 miles north of Ogden. The line is about completed to Red Rock, Montana, 30 miles north of Beaver Cañon. The unusually rigorous weather prevents, track will be laid on these sections during the season, making a complete north and south narrow-gauge line 304 miles long. Surveys have been made for divisions or branches debouching from the main line at Beaver Cañon to Yellowstone National Park, 63 miles; from Helena, Montana, via Madison Valley, about 240 miles; from the present terminus to Helena, via Beaverhead and Jefferson Valleys, about 215 miles; from Portneuf Station, Idaho, west and northwest via Boise City to the Columbia River, Eastern Oregon, and various preliminary observations of routes in Utah, Idaho, Montana, and Oregon, discarded or yet to be adopted. It is not extravagant to say that the Utah and Northern Railway has now, and evidently will have for years to come, by far the most extensive and naturally rich tributary region of any line in the length in the entire Trans-Missouri Country. Those portions of Idaho, Montana, and Western Wyoming whose traffic it already fairly controls, form a region of 200,000 square miles, a region which even in the infancy of development contains some of the largest and richest mineral belts and incomparably more extensive and fertile valley and desirable pasture lands in the entire Rocky Mountain country. Yellowstone National Park, which all visitors pronounce the most interesting in amazing natural wonders and beautiful scenes of any spot of like area

world, will, it is generally believed, from next season on, command very extensive tourist travel via the Utah and Northern, as it is now only 63 miles distant by easy natural grades from Beaver Cañon Station, or about 75 miles from Red Rock Station. The most fertile and thickly settled valleys of Northern Utah lie in the path of this line. The Salmon River and Yankee Fork gold and silver mining region, which is now shipping some very rich ores and is coming into prominence as a probable rival of Leadville in 1880, lies 150 miles west of the Utah and Northern Railway in Central Idaho, and has no other present or prospective outlet than the line under consideration. The vast salt deposits, which supply such a large demand in Montana, Idaho, and other Territories, are 85 miles east of the line in Eastern Idaho, and also shipped by it extensively. The Caribou gold and silver mines lie 100 miles east of Eagle Rock Station, and the Great Snake River gulch or placer Mines, which extend 400 miles along the stream named, are crossed at Eagle Rock. Montana, containing 16,000,000 acres of productive farm lands, 38,000,000 acres of grazing lands, an area underlaid with coal larger than the great State of Pennsylvania, and 14,000,000 acres of heavy pine forests, and whose mines have already yielded \$16,000,000, is in its earliest stages of development yielding the road a handsome revenue. Ores, bullion, hides, wool, beef, and salt will probably always be the principal articles of south-bound traffic, and mining, milling, and other machinery and miscellaneous supplies those north-bound. The shipments of ore must be especially large after this season, because of the nearness of the road to leading mines. The heavy immigration into Montana and the other vast unsettled regions adjacent must for many years make a handsome showing in the passenger business, as well as the tourist attractions of Yellowstone Park and other resorts, now almost unknown. One hundred miles of track were laid in 1878, and, with the 30 now in progress, 123 more will be laid this year.

There are no other projected lines of railway from main line of the Union Pacific Railroad at present.

The benefits and advantages, in a military point of view, derived by the government from these constructed and prospected lines of railway are very great.

*Earnings of the Union Pacific Railroad Company for the year ending September 30, 1879.\**

From:	
Passengers.....	\$2, 999, 151 19
Government .....	147, 028 16
Mails .....	596, 775 00
Express .....	465, 358 29
Freight .....	7, 191, 028 76
Freight, government .....	312, 619 91
Freight, company.....	884, 206 47
Car service.....	8, 283 10
Miscellaneous.....	301, 891 30
Rents .....	39, 437 53
Total.....	12, 945, 779 71

\* Earnings for October, 1879, estimated at \$1,533,580, and November, 1879, estimated at \$1,241,969.64, an increase of \$421,355 over October and November, 1878.

# REPORT

OF

## THE POSTMASTER-GENERAL

WASHINGTON, D. C., November

### RECEIPTS AND EXPENDITURES.

**SIR:** The total expenditures of this department during the fiscal year ended June 30, 1879, were..... \$33,

The revenues were as follows:

Ordinary receipts.....	\$29,434 648 43
Receipts from money-order business.....	219,226 83
Receipts from official stamps and stamped envelopes .....	388,107 60
	30,

Excess of expenditures over receipts..... 3,

Included in the above statement of receipts and expenditures sum of \$376,461.63 paid on liabilities incurred in previous years and not properly chargeable to the expenditures of the last year. Deducting this sum from the aggregate amount leaves \$33,000 the actual expenditures on account of service for the year.

The amount appropriated for service of the fiscal year 1878-'79, including sums appropriated by special acts, was.....	\$33,
Amount expended for 1878-'79 .....	33,

Leaving an unexpended balance of appropriations for the year of.....

This balance will be largely reduced when the unadjusted accounts for the year have been reported and paid.

Table No. 2 (page 268) accompanying the report of the Assistant Postmaster-General, shows the condition of the several accounts at the close of the fiscal year ending the 30th of September, 1879.

The expenditures and receipts of the department, there is a full account of and appertaining to the business of the last fiscal year.



cluding expenditures and receipts on account of previous fiscal years,) are as follows, viz :

Expenditures.....	\$33, 073, 437 82
Receipts, ordinary, from money-order business, and from official stamps.....	30, 041, 982 86

Leaving an excess of expenditures over receipts chargeable against the appropriations from the Treasury, hereinafter enumerated, of... 3, 031, 454 96

The expenditures during the fiscal year were \$801,209.77 less than those of the preceding year. This reduction is chiefly due to the change in the law regulating the compensation of postmasters, from commission on stamps sold to commission on stamps canceled.

The total receipts for the year were \$764,465.91, or 2.6 per cent., more than those of the preceding year, and \$1,007,884.58, or 3.4 per cent., more than the estimates therefor. The increase in the amount of revenue received over the amount estimated may be attributed, in a great measure, to the revival of business, resulting in an increased demand for postage-stamps, postal cards, &c., the sales of which amounted to \$769,481.87 more than for the last fiscal year, and \$2,387,559.23 more than for 1877.

The States returning revenues in excess of one million dollars were, New York, with \$5,710,310; Pennsylvania, \$2,732,593; Illinois, \$2,398,627; Massachusetts, \$2,087,228; Ohio, \$1,976,440; Missouri, \$1,124,555; and Michigan, \$1,004,487. Alaska foots the list with a revenue of \$53.

Excluding official postage-stamps and money-order receipts from both fiscal years, there is an increase of ordinary receipts over past fiscal year of \$671,703.27, or 2.3 + per cent.

The expenditures and receipts by fiscal quarters, and the increase or decrease therein, as compared with the corresponding quarters of 1876-'77 and 1877-'78, are shown by table No. 3 (page 270) which accompanies the report of the Third Assistant Postmaster-General.

#### AMOUNT DRAWN FROM TREASURY ON APPROPRIATIONS.

The following amounts were drawn from the Treasury during the fiscal year on account of special and deficiency appropriations :

To supply deficiencies in the revenues for the year ended June 30, 1879, act of June 17, 1878.....	\$3, 000, 000 00
For transportation of the mails, railroads, for 1878, and previous years, act of March 3, 1879.....	166, 392 27
For transportation of the mails, deficiency, 1876, and previous years, act of March 3, 1879.....	45, 873 31
To pay George H. Giddings, late contractor, deficiency, 1876, and previous years, act of March 3, 1879.....	14, 583 33
To pay H. G. Boardman, postmaster at Milton, Vt., act of June 19, 1878.	116 34
For payment of increased salary to letter-carriers, &c., act of June 28, 1879.....	71, 000 00
	<hr/> 3, 297, 965 25

## ESTIMATES FOR 1881.

The estimated expenditures for the fiscal year ending June 30, 1881, are.	\$32,000,000 00
The ordinary revenues are estimated at .....	210,000 00
Estimated revenue from money-order business.....	

Total estimated revenue for the fiscal year ending June 30, 1881.	
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Estimated excess of expenditures to be appropriated out of the general Treasury as a deficiency.....	
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The item for official postage-stamps has not been stated separately in the estimates for 1880-'81, for the reason that the official (or post) envelopes are, in a large measure, taking the place of official stamps; the estimated revenue from this source has been included in the receipts.

Table No. 1 (pages 256-267), accompanying the report of the Assistant Postmaster-General, furnishes the estimates in detail.

## DEFICIENCY APPROPRIATIONS.

The following statement shows the condition of the appropriations from the general Treasury to supply deficiencies in the postal department, viz :

1. For the fiscal year ended June 30, 1877, the amount unexpended was \$167,498.00, which, by operation of laws, was transferred into the surplus fund of the Treasury on the 30th June, 1879, leaving means available for the payment of unsettled liabilities incurred to July 1, 1877.

2. For the fiscal year ended June 30, 1878, an additional appropriation of \$166,392.27 was made, which amount was deposited in the Treasury and placed to the credit of the Post-Office Department for the payment of indebtedness on account of said fiscal year.

3. For the fiscal year ended June 30, 1879, the amount appropriated from the Treasury to supply deficiencies in the revenues was \$4,222,274.72, of which \$1,222,274.72 remains unexpended and available for the payment of liabilities for said fiscal year.

## LIABILITIES.

The unpaid indebtedness of the department for the fiscal year ending June 30, 1879, is estimated at \$713,344.45, for the payment of which there is available, as above stated, the sum of \$1,222,274.72.

The expenditures and receipts of the department and the condition of its accounts will be found in detail in the report of the Auditor for the Post-Office Department, hereto annexed.

## POSTAGE-STAMPS, STAMPED ENVELOPES, AND POSTAL CARDS.

The number of ordinary postage-stamps issued during the fiscal year was.....	774,358,780, valued at	\$20,117,259 00
Newspaper and periodical stamps.....	1,552,172, valued at	1,088,412 16
Special stamps for the collection of postage due under act of Congress approved March 3, 1879.....	15,667,600, valued at	365,957 00
Postal cards.....	221,797,000, valued at	2,217,970 00
Stamped envelopes, plain.....	80,806,700, valued at	2,160,417 92
Stamped envelopes, special-request.....	67,058,250, valued at	2,139,704 10
Newspaper wrappers.....	29,697,000, valued at	355,218 90
Official postage-stamps.....	14,201,822, valued at	624,999 95
Official stamped envelopes.....	17,209,150, valued at	469,011 90
Aggregating.....	1,222,348,474, valued at	29,533,950 93

## INCREASE IN ISSUES OF POSTAGE-STAMPS, ETC.

Altogether there has been an increase in the aggregate value of the above issues over that of the issues for the previous fiscal year. There has been a decrease in several of the items, as shown in the following table:

Description.	Fiscal year ended June 30, 1878.	Fiscal year ended June 30, 1879.	Increase.	
			Value.	Per cent.
Ordinary postage-stamps.....	\$19,468,618 00	\$20,117,259 00	\$648,641 00	3.33
Newspaper and periodical stamps.....	1,093,845 30	1,088,412 16	*5,433 14	*.04
Postage-due stamps (first issue in the latter part of present fiscal year).....		365,957 00	365,957 00	.....
Postal cards.....	2,006,300 00	2,217,970 00	211,670 00	10.55
Stamped envelopes, plain.....	2,418,102 91	2,160,417 92	*257,684 99	*10.65
Stamped envelopes, special-request.....	2,183,025 25	2,139,704 10	*43,321 15	*1.98
Newspaper wrappers.....	304,645 60	355,218 90	50,573 30	16.60
Total increase, ordinary issues.....			970,402 02	3.53
Official stamps, stamped envelopes and wrappers.....	1,052,647 70	1,094,011 85	1,364 15	0.13
Aggregate increase.....			971,766 17	3.40

\* Decrease.

In sending through the mails the supplies represented by the foregoing statements only five packages were lost.

## POSTAGE ON NEWSPAPERS AND PERIODICALS.

The total amount of postage collected during the year on newspapers and periodicals mailed to subscribers from known offices of publication was \$1,104,184.67, or \$859,160.66 on 42,958,033 pounds of matter at 2 cents per pound, and \$245,024.01 on 8,167,467 pounds at 3 cents per pound. The increase in the amount of postage collected during the year on this class of mail matter over that for the previous year is \$79,003.69, which, in view of the reduction in the rate of newspaper and periodical postage, which took effect on the 1st of May last, under the act approved March 3, 1879, is a very gratifying increase.

## DEAD LETTERS AND OTHER MAIL MATTER.

The total number of letters and parcels sent to the Dead-Letter Office during the year was 2,996,513, or 190,292 less than the receipts of the previous year. The reduction may be attributed to the increased efficiency of the delivery service, and the growing popularity of our post-office turn-request system, by which not only the undelivered letters and "special-request" envelopes supplied by the department are returned to the writers direct, but those in envelopes bearing only a business name, the name and address of the sender, a street and number, a post-office box, or other indication of origin, are promptly returned to the sender without the intervention of the Dead-Letter Office.

The extent to which the people avail themselves of this privilege is well illustrated by the fact that there were mailed in a single day at the New York post-office 15,625 letters in the special-request envelopes furnished by the government, and 86,753 in envelopes supplied by private enterprise bearing name and address or other designation by which the writer could be identified.

For convenience in treatment the dead matter was separated into the following classes: Ordinary mailed letters, 1,876,702; domestic parcels, 382,100; of foreign address, 91,121; of foreign origin, 164,223; returned postage, 306,344; misdirected, 58,754; without any address, 7,944; returned from hotels, 47,166; fictitious address, 17,544; fourth class matter, 28,634; and 5,976 registered letters.

The amount of money taken from letters which could not be delivered to the writers, and deposited in the Treasury, was \$3,323.39.

The amount of postage collected upon short-paid matter for return to destination, and unclaimed articles of the third and fourth class matter returned to the senders, was \$4,471.70.

A statement of the contents and final disposition of letters and parcels of all classes will be found in the report of the Third Assistant Postmaster-General, and tables submitted therewith, pages 289-293.

## STATISTICS OF REGISTRATION.

The total number of letters and parcels registered during the year was 5,429,022; of which 4,227,079 were domestic letters; 203,497 parcels of third and fourth class matter; 163,684 letters registered to foreign countries; 3,097 parcels of third and fourth class matter forwarded to foreign countries, and 831,665 letters and parcels of fourth class matter forwarded for the government, and by law exempted from payment of registry fees. The amount of registry fees collected during the year was \$459,735.70; an increase over the preceding year of \$10,000. The increase in the number of letters and parcels forwarded was 1,031,517,445.10. The extension of the registration system



cles of the third and fourth class of mail-matter has been received with great favor by the public. Out of 69,644 parcels of such matter registered at the New York City post-office, but five losses are reported, and these occurred on stage routes in the far West, and, upon investigation, may prove to have been simply delays occasioned by carelessness.

#### IMPROVEMENT OF THE REGISTRY SYSTEM.

Advantage was taken of the publication of a new edition of the postal laws and regulations to make a thorough revision of the registry system, by which its efficiency has been greatly increased. Distributing offices have been abolished, and all registered matter is now mailed direct to its destination; the through registered pouch system has been greatly extended; and all the blanks used for recording the registry business have been greatly simplified. The losses of registered matter during the year amounted to about one out of every seven thousand letters or packages forwarded.

#### STATISTICS OF TRANSPORTATION OF THE MAILS.

There were in the department on the 30th of June, 1879, 5,659 contractors for the transportation of the mails on public routes.

There were at the close of the fiscal year 1,948 special offices, each with a mail-carrier, whose pay from the department is not allowed to exceed the net postal yield of the office.

Of public mail-routes in operation there were 10,396 (of which 1,059 were railroad routes, being an increase of 59 routes of this class over the previous year), aggregating in length 316,711 miles; in annual cost, \$16,723,808. Adding the compensation of railway post-office clerks, route-agents, mail-route messengers, local agents, and mail-messengers, amounting to \$3,289,064, the aggregate annual cost was \$20,012,872.

The service was divided as follows:

Railroad routes: Length, 79,991 miles; annual transportation, 93,092,992 miles; annual cost, \$9,567,590; about 10.27 cents per mile.

Steamboat routes: Length, 21,240 miles; annual transportation, 5,091,474 miles; annual cost, \$754,388; about 14.81 cents per mile.

Other routes on which the mails are required to be conveyed with celerity, certainty, and security: Length, 215,480 miles; annual transportation, 69,248,339 miles; annual cost, \$6,401,830; about 9.24 cents per mile.

There were, at the close of the fiscal year, 4,465 offices supplied by mail-messengers, at an annual cost of \$664,174.

The railroad routes were increased in length 2,871 miles, and in cost \$995. This small increase in cost is owing to the reduction in the rate of pay under act of June 17, 1878.

The steamboat routes were increased in length 3,171 miles, and in cost \$1,905, and the "Star" routes 8,703 miles in length and \$686,887 in cost.

There was an increase over the preceding year in the total length of

routes of 14,745 miles; in annual transportation, 9,247,430 miles in annual cost, \$689,787. Adding the increase in cost for rail office clerks, route-agents, mail-route messengers, local agents, messengers, amounting to \$70,663, the total increase in \$760,450.

#### COST OF RAILWAY SERVICE.

The cost of railway service on the 30th of June, 1879, was a total of \$9,692,590 per annum, an increase over the cost of the service of the preceding fiscal year of \$125,995. This increase does not, however, represent the actual rate of increase in the service, as accounted for by the reduction of 5 per cent. in the rate of compensation taken of the reduction of 5 per cent. in the rate of compensation. July 1, 1878, made under the act of June 17, 1878. The amount of deduction is in round numbers \$400,000, making, with the \$125,995 increase of \$525,995 for 1879 over 1878, being a little less than 5.5 per cent.

The general increase of business all over the country, and the probable certainty that the present prosperity will continue for some time to come, will require the appropriation for railway service to be at least 12 per cent. for the next fiscal year, and the estimate for service is accordingly placed at \$10,000,000.

#### INCREASE OF RAILWAY POST-OFFICE LINES IN THE SOUTH.

The appropriation for railway post-office car service for 1881 is \$1,250,000. Under this appropriation new lines of postal cars have been established where they were most needed, especially in the Southern States, and the increase for the next fiscal year will not exceed \$100,000. The estimate for this service for 1881 is therefore placed at \$1,350,000.

#### THE SPECIAL APPROPRIATION FOR PROPER FACILITIES.

The appropriation of \$150,000 to enable the Postmaster-General to obtain proper facilities for the prompt transmission of the mails by railroad companies has enabled the department to prevent injury to the service upon the most important lines by allaying the dissatisfaction of the railroad companies at the general reduction of 10 per cent. in compensation; and has in several instances enabled the department to secure the running of special trains of great value to the business interests of the country. I would therefore recommend that this appropriation be renewed for the next fiscal year, and that the amount be increased according to the estimates submitted by the Second Assistant Postmaster-General.

#### TRANSFER OF MAILS FROM DEPOTS TO POST-OFFICES.

I desire again to call the attention of Congress to the importance of fixing the relative rights and duties of railroad companies and the department in regard to the transfer of mails from stations to post-offices. Until this matter is settled upon an equitable basis it will be impossible for the department properly to adjust the compensation of railroads for carrying the mails. It certainly seems an anachronism, to say the least, to expect

stage-coach can be driven without inconvenience 80 rods away from a turnpike to deliver mail at a post-office, that a railroad company should also be required to deliver mail to post-offices, when they happen to be within that distance of a station, without compensation therefor.

#### FAILURE TO OBTAIN STATISTICS FROM RAILROAD COMPANIES.

The act of March 3, 1879, provided: "That the Postmaster-General shall request all railroad companies transporting the mails to furnish, under seal, such data relating to the operating receipts and expenditures of such roads as may in his judgment be deemed necessary to enable him to ascertain the cost of mail transportation and the proper compensation to be paid for the same; and he shall in his annual report to Congress make such recommendations, founded on the information obtained under this section, as shall in his opinion be just and equitable."

In compliance with this direction letters have been addressed to railroad companies propounding a series of questions, the answers to which if truly given would enable the department to arrive at the cost and profit per linear foot per mile run of passenger-cars, which is believed to be a just and equitable basis upon which to fix the rates of pay for space used for carrying the mails and the postal employes engaged in their distribution. Very few companies have replied, and the pressure of current business has prevented the tabulation of the replies that have been received. Consequently no recommendation can be made.

#### TRANSCONTINENTAL AUSTRALIAN MAILS.

For several years this department has carried across the continent, between New York and San Francisco, a heavy British and Australian mail, at an annual cost of about \$100,000, for which no return had been received from Great Britain until the month of August, 1876, when, under the exceptional provision made in the Treaty of Berne for their lengthy and expensive railway service, special rates of territorial transit were agreed upon between this Department and the British Post-Office, which were considered sufficient to cover the actual cost of the railway transportation across our continent.

Through the efforts of the efficient representatives of this Department at the International Postal Congress, held at Paris in the spring of 1878, the exceptional character of the service rendered by this Department in transporting the closed mails between New York and San Francisco was reaffirmed in the Convention of Paris, and the British Government has already paid into the United States Treasury the actual cost of doing the work, which to this time amounts to something over a quarter of a million dollars. While this service does not appear as a credit to the item of railroad transportation, it is such in fact.

#### EXTENSION OF STAR SERVICE—A DEFICIENCY CREATED.

In consequence of the creation of new post-routes, upon which service was demanded by members of Congress, officers of the Army, and the

people of the sections interested, the star service has been extended to meet the necessities of the country. In so doing, an unavoidable deficiency of about \$150,000 has been incurred. To meet this deficiency a surplus in the appropriation for steamboat and railroad service of \$250,000, and I would, therefore, recommend that the required sum be transferred from these appropriations to that for star service, thereby obviating the necessity for a deficiency appropriation.

#### COMPENSATION FOR INCREASED SPEED AND INCREASED FREQUENCY OF STAR SERVICE.

The operation of the present laws regulating the increase of compensation for increased speed and increased frequency of service on star routes results in great loss to the government. These laws (sections 3960 and 3961 of the Revised Statutes) have been in force for many years and are the source of nearly all the deficiencies in the appropriation for star service which have ever been created. They are as follows:

**SEC. 3960.** Compensation for additional service in carrying the mail shall be in excess of the exact proportion which the original compensation bears to the service; and when any such additional service is ordered, the sum to be allowed therefor shall be expressed in the order, and entered upon the books of the Postmaster-General, and no compensation shall be paid for any additional regular service rendered in the issuing of such order.

**SEC. 3961.** No extra allowance shall be made for any increase of expenditure in carrying the mail unless thereby the employment of additional stock and carriers is necessary, and in such case the additional compensation shall bear no greater proportion to the additional stock and carriers necessarily employed than the compensation in the original contract bears to the stock and carriers necessarily employed in the execution.

It frequently happens, especially in the mining regions of the West, that, at the time of advertising, service is not required upon a route more frequently than once or twice a week; but after the contract has been made and service begun, population increases along the route, and an increase of speed and more frequent service become necessary. Under such circumstances it is clear that the rate that was reasonable for service once or twice a week, through a sparsely-settled region, becomes exorbitant when multiplied by three or six to cover daily service. I would, therefore, recommend that section 3960 be so amended as to require the Postmaster-General to advertise for new proposals for the increase of service, the contract to be awarded to the lowest responsible bidder. Section 3961 should be so amended that when the cost of increased speed would amount to more than 50 per cent. of the cost of the original service the Postmaster-General should readvertise for service at increased speed.

#### INCREASE OF STAR SERVICE IN THE SOUTHERN STATES.

The estimates for star service for the next fiscal year contemplate the continuance of the present efficient service in other States, and the increased mail facilities in the States of Indiana, Ohio, Kentucky,



Carolina, North Carolina, Tennessee, Georgia, Florida, Mississippi, and Alabama. This service has already been advertised, the contracts to begin July 1, 1880.

#### FAST MAILS TO HAVANA AND SOUTH AMERICA.

The efforts of the department to establish a fast-mail service with Havana via Cedar Keys and Key West in order to meet the demands of commerce, have failed for several years on account of the insufficiency of the compensation allowed by law for such service. If the Postmaster-General were authorized to contract for service between Havana and the United States ports mentioned, at a sufficient rate of pay to secure the necessary speed and frequency, the commerce of the country would be greatly benefited. I believe that a general law should be passed authorizing contracts for carrying the mail between the United States and West Indian and South American ports, in American-built steamers carrying the American flag, at a fixed minimum and maximum price, the amount to be expended being regulated by the annual appropriations. Or the service might be thrown open to competition in the same manner as the star service. The adoption of such a policy by Congress would enable this country to control the profitable commerce with South America and the West Indies, which is now almost monopolized by Great Britain.

#### FINES AND DEDUCTIONS.

The amount of fines imposed upon contractors and deductions made from their pay for failures and other delinquencies for the fiscal year ended June 30, 1879, was \$177,098.57, and the amount remitted for the same period was \$16,571.76, leaving the net amount of fines and deductions \$160,526.81.

#### MAIL-BAGS AND CATCHERS.

From Table G of the report of the Second Assistant Postmaster-General (page 162), it will be seen that the total number of new mail-bags purchased under contract and put into service during the year was 104,021, of which 14,021 were locked pouches for first-class matter, and 90,000 were canvas sacks for second, third, and fourth class matter. This is an increase in the number of mail-bags issued of 24,123 over the previous year.

The number of new mail-catchers issued was 300.

The total expense of mail-bags and mail-catchers, including repairs, was \$170,266.26. The average annual cost of the last three preceding years was \$171,588.10.

The total number of mail-bags repaired was 356,527, and the total cost of their repairs was \$37,613.10. Under the old system of repairs the cost would have been \$80,338.29. In the last four years since the old system of repairs was abolished the total saving has been \$192,282.06.

## MAIL LOCKS AND KEYS.

The total expense of mail locks and keys during the year was \$ the average annual cost for the last three preceding years has been \$12,021.66. The term of all contracts for mail locks and keys during the preceding year, and supplies have been kept up during the past year by repairs and small purchases from the late contracts. A greater portion of the mail-locks now in use are nearly worn out and are becoming insecure from their long subjection to the peculiar usage of the mail service. They were procured under contract in 1870, and as experience has shown that ten years is the limit of life for mail-locks, their further use is not compatible with the security. The locks used for through-registered pouches are no longer adapted to the service. I would therefore earnestly recommend that provision be now made for superseding at the earliest possible date the locks now in use by those of new and improved pattern. In connection reference is made to the report of the Second Postmaster-General (page 57).

## READJUSTMENT OF COMPENSATION TO RAILROADS.

I desire to renew the recommendation of my last report for the establishment of a law readjusting the compensation of railroads for carrying mail upon the basis of space, speed, and frequency, supplemented by the weight of mails carried. This would enable the department to designate every railroad in the country by name as a railway post-office line, which they all are now in fact. The only reason why they are not so called is because section 4004 of the Revised Statutes prohibits the additional pay for post-office cars, and to so designate all railroads would increase the annual expenditure, under the present basis of compensation, by over a million dollars; and hence the anomaly is presented of railway post-office lines which furnish apartments in cars only 12 feet long by 6 feet 6 inches in width, and of route-agent cars which entire cars are furnished 55 feet long and 8 feet 9 inches in width, both of which precisely the same work of distributing the mails is carried on.

## RAILWAY POST-OFFICE LINES.

A tabular statement (I, page 164) hereto appended, shows the number of railway post-lines in operation on the 30th of June 1879, extending over 17,340 miles of railroad routes, an increase of 1,000 miles as compared with the preceding year.

The number of clerks in the service at the end of the fiscal year ending June 30, 1878, was 1,081, whose annual salaries aggregated \$111,700.

The number of clerks in the service at the end of the fiscal year ending June 30, 1879, was 1,091, whose annual salaries aggregated \$112,700, showing an increase of 10 clerks and of \$11,000 in salaries.

The annual miles of service performed by railway post-office clerks, route-agents, and mail-route messengers was 52,419,773. (See Table K, pages 168-213.)

#### CLASSIFICATION OF EMPLOYÉS OF THE RAILWAY MAIL SERVICE.

I most earnestly renew my recommendation of last year for the re-classification of the employés of the railway mail service as advised by the general superintendent of that service. No additional expense will be incurred, but the business of the department will be greatly facilitated and much annoyance will be spared to the appointment office which is now caused by the necessity of transferring employés from one class to another in order to avoid exceeding the appropriation. The railway mail service is the most important branch of the postal system. Under a judicious system of appointments and a tenure of office dependent upon merit alone, its efficiency has developed so that the enormous amount of 2,648,661,550 pieces of mail-matter were distributed by it during the past year with only one mistake in the disposition of each 3,469 pieces. The work performed by all the employés is the same, varying only in amount, and yet under the present mode of appropriating for postal clerks, route-agents, mail-route messengers, and local agents, two men working in the same car and performing the same service frequently receive a different salary simply because one is paid out of the appropriation for route-agents and the other out of that for postal clerks. This is the greatest evil now existing in the service and it can be completely remedied by the classification of the employés as recommended.

#### POST-ROUTE MAPS.

The work of preparing and keeping up the post-route maps has been continued in the topographer's office during the past year, rendering essential aid to the officers and employés of the department, particularly to those of the railway mail service, in a proper understanding of the requirements, actual and prospective, for the speedy distribution of the mails. These maps are also in great request by the other departments of the public service.

During the past year, besides successive editions of previously issued maps, new maps of the States of Minnesota, South Carolina, and Georgia, Arkansas, and the Indian Territory have been completed, and a map of Dakota Territory is nearly ready. New maps of Louisiana and of the Pacific States and Territories are required, and will be designed to take the place of the provisional copies hitherto in use.

The publication is desirable of an extended table of distances for use in the settlement of mileage and telegram accounts referred to the topographer by this and other departments for his certificate, for the compilation of which the force at his disposal is not sufficient.

The work of this office is necessarily increasing with the extension of

the mail-service, and I have, therefore, in my present estimates, a somewhat larger appropriation than that for the past year.

#### OPERATIONS OF SPECIAL AGENTS.

The duties of the special agents of this department in exercise of their surveillance over the hundred thousand persons who are legally permitted to have access to the mails have been performed with great efficiency. Robbery of the mails and stealing the postal revenues by employees of the department cannot escape detection and punishment, and the general knowledge of this fact should greatly assist postal employees to resist temptation.

A system of thorough inspection of post-offices by special agents, embracing the solvency of the postmaster's bond, the organization of the office and the manner of conducting it, condition of accounts, management of government property, etc., has been perfected to the great advantage of the postal service.

#### SPECIAL AGENTS SHOULD BE STYLED INSPECTORS OF POST-OFFICES.

I recommend that the designation of the officers known as special agents be changed to inspectors, as more appropriate and less likely to cause confusion with others in public and private employment. The title is given to similar officers in the postal service of other countries. It should be borne in mind that the duties of these officers are by no means confined to the detection and arrest of offenders against the postal laws. On the contrary, most of their time is occupied in the inspection of the postal service, the examination of postmasters' accounts, the verification of the solvency of their bonds, the collection of debts due to the department by postmasters, and the general supervision of all employees of the postal service.

#### ARRESTS AND CONVICTIONS OF OFFENDERS AGAINST POSTAL LAWS.

The number of persons arrested during the year was 552, of whom 106 were prosecuted in United States courts and 93 in State courts. Of the former, 191 were convicted, 11 acquitted, 10 escaped, 39 persons were dismissed, 2 forfeited bail, and 206 await trial. The number of highwaymen arrested for mail-stage robberies, the prosecution of which is pending in United States courts and 3 in State courts. The arrests are classified as follows:

*Subject to jurisdiction of United States courts.*

Postmasters .....	
Assistant postmasters .....	
Clerks in post-offices .....	
Postal clerks and route-agents .....	
Letter-carriers .....	
Mail-carriers .....	
Other employes .....	
Highwaymen .....	
Burglars .....	
All others for various offences .....	



*Subject to jurisdiction of State courts.*

Highwaymen .....	3
Burglars .....	55
All others for various offenses .....	35
	<u>552</u>

## CASES ACTED UPON BY SPECIAL AGENTS.

The number of cases made up for investigation by special agents during the year was 23,242, classified as follows:

*Registered cases, class A.*—2,759.—Registered letters reported lost, 2,109, of which 1,995 contained cash, \$21,790.07; 114 contained money-orders and exchange, \$35,697.05. Of this number, 1,120 were recovered, viz, 1,067 containing 53 money-orders and exchange to the value of \$10,872.21, and cash \$9,873.59; reported rifled of contents, 578, containing cash \$8,080.10. Of this number, investigation proved 121, alleged to contain \$1,751.09, to have been falsely reported. Reported tampered with, 72, containing \$1,144.33, of which 47, said to contain \$910.85, were erroneously reported. The disbursements of moneys collected and recovered, on account of lost and rifled registered letters, amounted in 566 cases to \$16,952.85, of which amount \$7,554.79 was paid in 260 cases of loss occurring in this year, and the remainder, \$9,398.06, in 306 cases of previous years.

*Ordinary cases, class B.*—15,261.—Ordinary letters reported lost and rifled, 14,538, of which 5,802 contained cash \$40,056.78; 1,353 money-orders and exchange, \$453,947.96, and 7,383 contents not specified. Of this number, 1,480 were recovered, viz: 397 containing cash \$2,942.02; 184 containing money-orders and exchange \$49,619.99, and 899 contents not specified. The disbursements of moneys collected and recovered on account of lost ordinary letters amounted, in 126 cases, to \$719.49, of which amount \$177.75 was paid in 17 cases of loss occurring in this year, and \$541.74 in 109 cases of previous years.

Robberies of mail-stages on the highway, 50; robberies of post-offices, 98; burning of mail, 4; and charges of depredation against postmasters, 246.

*Miscellaneous Cases, Class C.*—5222.—This class comprises failing contractors, defaulting postmasters, change of postmasters, solvency of sureties of postmasters, inspection of post-offices, post-routes, and forgery of money-orders.

## POST-OFFICES ESTABLISHED AND POSTMASTERS APPOINTED.

The report of the Appointment Office shows the following:

Number of post-offices established during the year .....	2, 676
Number discontinued .....	1, 079
Increase .....	1, 597
Number in operation June 30, 1878 .....	39, 258
Number in operation June 30, 1879 .....	40, 856
Number filled by appointment of the President .....	1, 711
Number filled by appointment of the Postmaster General .....	39, 144

Appointments were made during the year—

On resignations and commissions expired.....	
On removals .....	
On changes of names and sites .....	
On deaths of postmasters .....	
On establishment of new post-offices .....	

Total appointments .....	
Number of cases acted on during the year .....	

NUMBER OF SPECIAL AGENTS AND EMPLOYÉS OF THE RAILWAY SERVICE.

The number and aggregate compensation of special agents, post-office clerks, route-agents, mail-route messengers, and local agents in service during the year ended June 30, 1879, were—

* 45 special agents .....	
1,091 railway post-office clerks.....	
1,143 route agents.....	
241 mail-route messengers .....	
134 local agents .....	

EMPLOYÉS IN THE POST-OFFICE DEPARTMENT.

The following table shows the number of employés in the Department; also, the number of postmasters, contractors, post-offices, railway post-office clerks, route-agents, and other service June 30, 1878, and June 30, 1879:

Departmental officers and employés:

Postmaster General.....	
Assistant Postmasters General .....	
Superintendent of money-order system.....	
Superintendent of foreign mails.....	
Chief clerk to the Postmaster-General.....	
Chiefs of divisions.....	
Topographer for department.....	
Disbursing officer and superintendent of building.....	
Law clerk .....	
Stenographer .....	
Appointment clerk .....	
Superintendent of blank agency .....	
Chief clerks of bureaus .....	
Clerks, messengers, watchmen, &c.....	

Postmasters and other officers and agents:

Postmasters.....	
Contractors.....	
Clerks in post-offices .....	
Letter-carriers .....	
Railway post-office clerks .....	

\* Other special agents charged to separate appropriations.

	1878.	1879.
Postmasters and other officers and agents—Continued.		
Route-agents .....	1, 143	1, 143
Mail-route messengers .....	241	241
Local agents .....	143	134
Special agents .....	59	54
Total in service .....	55, 220	56, 844

## CLERKS IN POST-OFFICES.

The increasing demands of the postal service call for a large increase in the appropriation for the payment of clerks in post-offices. The estimate for this item is greatly below the actual needs of the service. I have so estimated, however, because I did not desire to increase the growing disparity between the revenues and expenditures of the department. To provide a less sum for the employment of clerks than I have estimated for will cripple the work of post-offices, and in many instances delay the transmission of the mails. Many localities can now be mentioned where an insufficiency of clerical force retards the dispatch of the mails; and, in fact, nearly all complaints of delays are traceable to the inability of postmasters to properly handle the enormous amount of matter deposited in and passing through their offices.

## THE FREE-DELIVERY SYSTEM.

The increase in the appropriation for the free-delivery system during the last fiscal year was only \$50,000 over that of the preceding year. It enabled the department to partially provide for the increased demands of the service in some of the large cities, but it was not sufficient to justify a considerable extension of the system. New service was, however, established at Oakland, Cal., at a cost during the year of \$3,272.01. The remainder of the \$50,000 increase of appropriation, to wit, the sum of \$46,727.99, was expended in the employment of additional carriers in the large cities and the incidental expenses connected therewith.

## POSTAGE ON LOCAL MATTER.

The postage on local matter during the last year exceeded that of the preceding year in the sum of \$360,272.35, and it also exceeded the entire cost of the free-delivery service in the sum of \$864,771.14. Much of the increase in the amount derived from local postage is believed to have come from the extension of the territorial limits supplied by carriers in several of the large cities.

The increase in postage on local matter in the free-delivery cities last year was 14.74 per cent.; the increase in the cost of the service during the same period was only 6.34 per cent.

The average cost per piece of handling local matter was 2.40 mills, or a reduction of .10 of a mill as compared with last year, although the average cost per carrier (attributable to the increase of compensation provided in the act of February 21, 1879) was \$24.27 in excess of the previous year.

Very little complaint of the frequency of the service or of the man-

ner of performing it has reached the department of late. said to have attained great success. With larger appropriation frequent deliveries could be secured, and such improvement with universal commendation in the larger cities.

#### AN INSUFFICIENT APPROPRIATION FOR LETTER-CARRIERS.

After the passage of the act of February 21, 1879, and in accordance with its provisions, the free-delivery cities were divided into two classes. Those with populations exceeding seventy-five thousand were in the first class, and those with smaller populations in the second. In cities of the first class the pay of carriers was also classified by the said act; one-half of the carriers employed therein being paid at a rate of one thousand dollars per annum, the other half at a rate of eight hundred dollars per annum. The pay of carriers in cities of the second class was fixed at eight hundred and fifty dollars per annum.

To meet the cost of thus increasing the compensation of carriers a sum of \$71,000 was appropriated. It proved, however, to be insufficient. In the attempt to comply with the law the appropriation unexpectedly exceeded in the sum of \$1,706.61, and the deficiency the fact was not made until the payments for the month of June were completed. No payment of the additional compensation provided by the act referred to was made for the month of June, and that sum is still due. I have, therefore, to recommend that a sum of \$23,706.61 be provided for, \$22,000 thereof to be expended in payment of the amount due carriers for the month of June, as before, and the remainder to cover the deficiency mentioned above.

#### STATISTICS OF THE FREE-DELIVERY POST-OFFICES.

The aggregate results for the fiscal year were as follows:

##### AGGREGATE RESULT OF FREE-DELIVERY SERVICE FOR THE FISCAL YEAR ENDED JUNE 30, 1880.

		Increase over last year.
Number of offices.....	86	1
Number of carriers.....	2,359	84
Mail letters delivered.....	213,996,862	10,534,334
Mail postal cards delivered.....	40,299,460	6,422,304
Local letters delivered.....	64,710,184	7,229,057
Local postal cards delivered.....	31,904,474	2,709,864
Registered letters delivered.....	1,410,044	117,600
Newspapers delivered.....	102,365,370	10,437,360
Letters collected.....	253,174,241	37,125,400
Postal cards collected.....	62,130,708	15,298,583
Newspapers collected.....	39,862,632	4,297,413
Whole number of pieces handled.....	809,854,065	94,071,915
Pieces handled per carrier.....	339,060	24,431
Total cost of service, including pay of special agents.....	\$1,947,706 61	\$123,585 76
Average cost per piece in mills.....	2 40	
Average cost per carrier*.....	\$823 34	\$24 27
Amount of postage on local matter.....	\$2,812,523 80	\$360,272 85
Excess of postage on local matter over the total cost of service.....	\$864,771 14	\$230,086 59

\* Based on the aggregate (\$1,942,261.15) paid carriers, including incidental expenses of offices, less \$5,445.46 paid special agents.



## NUMBER OF DOMESTIC MONEY-ORDER OFFICES.

At the commencement of the last fiscal year the total number of post-offices authorized to issue and pay domestic money-orders was 4,143. During the year 400 new offices were added to the list and 31 were discontinued, making the total number of such offices in operation on the 30th day of June, 1879, 4,512.

## ISSUES AND PAYMENTS OF DOMESTIC MONEY-ORDERS.

During the year 6,372,243 domestic money-orders, amounting to \$88,254,641.02, were issued, and 6,360,611, amounting to \$87,427,047.26, were paid. The amount of such orders repaid during the same period was \$579,152.94, which, added to the amount of the orders paid, makes the payments amount to \$88,006,200.20. The excess of the issues over the payments was \$248,440.82.

The fees received by postmasters for the issue of domestic money-orders amounted to \$798,625.65. The average amount of such orders issued was nearly \$13.85, being about 66 cents less than the average of the preceding year, and the average fee received for each order was 12.53 cents, being 0.21 less than the average of the preceding year.

Of the total amount of orders paid, about \$41,325 were orders issued to the War Department for payment of claims for bounty and back pay due by the United States to colored soldiers for services during the late war. These orders were all transmitted to the postmaster by whom payable through the office of the superintendent of the money-order system, and with them were transmitted certain blank forms supplied by the War Department and relating to the claims, which it was made the duty of the paying postmaster to cause to be properly filled out and duly signed. As, by request of the War Department, these orders were only to be paid to the payees named in the corresponding advices, and were not, like other money-orders, to be transferable by endorsement, they often gave rise to considerable correspondence, and in all cases entailed extra labor upon the respective postmasters, for which they received no additional compensation.

## INCREASE IN THE MONEY-ORDER BUSINESS.

By the foregoing statement, when compared with that relating to similar transactions of the previous year, an increase of \$6,812,276.15, or 8.36 per cent., is shown in the amount of the orders issued; of \$6,655,592.06, or 8.24 per cent., in the amount of the orders paid; and of \$83,364.45, or 11.65 per cent., in the amount of fees received.

## REVENUES AND EXPENSES OF THE MONEY-ORDER SYSTEM.

The Auditor has reported the following statement of revenue which accrued from domestic money-order transactions during the fiscal year ended June 30, 1879:

Fees received on domestic money-orders issued.....	
Premiums, &c.....	
Total.....	
Commissions and clerk hire.....	\$512,550
Incidental expenses.....	31,946
Lost remittances.....	4,364
Bad debts.....	26,524
Net revenue.....	223,960

The revenue, \$223,960.77, from the domestic business greater than that of the previous year, being an increase of 10 per cent.

Allowances for clerk hire amounting to \$177,439.00 were made the last year at several of the larger post-offices out of the commissions accruing from their money-order business over and above the amount of commissions as, when added to the postmaster's salary, make his entire compensation \$4,000 per annum, the limit.

The allowances are made at such offices in lieu of commissions. The exigencies of the service require additional clerical help, which is included in the foregoing statement of the Auditor, in the item "Commissions and clerk hire."

#### REMITTANCES OF SURPLUS FUNDS.

During the past fiscal year the aggregate amount of surplus funds accruing at the smaller post-offices and remitted by the larger post-offices, designated as their depositories, was \$5,000.

#### LOST REMITTANCES.

In the last annual report it was stated that nine cases, amounting to \$1,320.00, of remittances alleged to have been lost in the month of June 30, 1878. The amount involved in these cases, as since ascertained, should have been reported as \$1,323.50. There were two cases, amounting to \$502.50, which occurred prior to June 30, 1878, but were not brought to the attention of the department until after the close of that fiscal year, making the total number of cases eleven and the amount involved \$1,825.50. During the fiscal year ended June 30, 1879, in thirty-two cases remittances amounting to \$6,698.00 were reported as lost, making a total of forty-three cases amounting to \$8,523.50, giving rise to investigation by the department.

Of this amount, \$3,589.50 were allowed to the postmaster for the remittances; \$1,235.00 were recovered by special agents of the department; \$760.00 were charged to the remitters; and, pursuant to act of Congress approved June 14, 1875, of four remittances, amounting to \$487.00, burned while en route January 7, 1875, was assumed by the department.

Ten cases of remittances, amounting to \$2,452.00, remained at the end of the fiscal year.

The discrepancy of \$775.00 between the amount, \$3,589.50, reported above as allowed to postmasters on account of remittances lost in the mails, and the amount, \$4,364.50, reported by the Auditor as so allowed, is owing to the fact that a credit of \$775.00 was authorized by this department during the year ended June 30, 1877, which was not settled by the Auditor until after the commencement of the succeeding year.

#### TRANSFER OF MONEY-ORDER FUNDS AND DRAFTS.

In case of money-order offices at which the amount required to pay orders when presented is either habitually or occasionally in excess of the amount received from the sale of orders and from depositing post-offices, postmasters are authorized to make transfers of funds from their postage account to their money-order account to meet the deficiency arising from such excess in the payments.

In cases where the amount of postage funds was insufficient or not available for this purpose, postmasters at offices east of the Rocky Mountains were allowed a definite amount of credit with the postmaster at New York, N. Y. Drafts amounting to \$8,295,931.50, against credits so allowed, have been paid by the postmaster at New York, N. Y., during the last fiscal year.

To meet similar requirements in the States and Territories of the Pacific slope, where drafts upon New York are not at all times available, postmasters were furnished with funds, amounting to \$144,750, by the postmaster at San Francisco, Cal., and \$20,910 by the postmaster at Portland, Oreg.

At certain post-offices, where large sums are required to meet payments of mail-contractors and other creditors of the department, the transfer of funds from the money-order to the postage account is, when necessary, specially authorized by the department.

The transfers from the money-order to the postage account during the last year amounted to \$462,658.48, and from the postage to the money-order account to \$654,229.71, leaving a balance of \$191,571.23 to the credit of the postage account.

#### MONEY-ORDERS ERRONEOUSLY PAID.

In the last annual report it is stated that claims for reimbursement on account of the alleged erroneous payment of thirty-one money-orders, amounting to \$587.15, remained unsettled at the close of the year. Since the end of the period to which that report refers, additional cases of twenty-one orders, amounting to \$401.90, alleged to have been erroneously paid prior to July 1, 1878, have been brought to the notice of the department.

Sixty-two orders, amounting to \$1,676.34, were alleged to have been erroneously paid during the year, being at the rate of 1 erroneous payment in 102,591 orders paid, making a total of 114 alleged erroneous payments, amounting to \$2,665.39, under investigation during the year.

Nine of these orders, amounting to \$203.33, were afterward to have been paid to the proper person; in case of twenty the whole amount, \$746.30, was recovered by special agent department. In case of four others, amounting to \$50.85, assumed by the department; the amount of forty-three orders was charged to the paying postmaster, or through him to his office through whose negligence the error occurred; in 6 orders the payee was required to sustain the loss, \$222, and of nineteen orders, amounting to \$331.87, remained unsettled of June, 1879.

#### DUPLICATE MONEY-ORDERS.

The total number of duplicate money-orders issued was an increase of 2,399 over the number of such orders issued the previous year. Of this number 17,304 were issued in lieu of orders in the mails, or which, by reason of imperfect address or clerical error, or from some unknown cause, had failed to reach the payee; 1,000 were issued in lieu of orders alleged to have been lost through negligence or misfortune of the remitters, payees, or indorsees; 1,000 issued to remitters in lieu of orders payment of which had been invalidated in pursuance of section 3929 of the Revised Statutes of the United States, because drawn in favor of the proprietors or agents of lotteries, gift enterprises, or other "schemes or devices for obtaining money through the mails by means of false or fraudulent representations, or promises"; 91 in lieu of orders which had been invalidated by reason of having received more than one indorsement; 1,000 orders invalidated because not presented for payment within 6 months after the date of their issue, and 115 in lieu of orders mutilated or rendered illegible while in the hands of remitters, payees, or indorsees.

#### INTERNATIONAL MONEY-ORDER BUSINESS—REVENUES AND EXPENSES.

The Auditor has not reached a final adjustment of the accounts for the last quarter of the fiscal year, required to be made with the accounting officers of the several foreign countries with which conventions are in force. For this reason he is unable, at present, to furnish an exact statement of the revenue for the year from the exchange of money-orders with those countries.

The revenue and expenses for the year ended June 30, 1879, given by the Auditor in the case of each of the foreign countries are given below under the appropriate heading.

#### EXCHANGE OF MONEY-ORDERS WITH SWITZERLAND.

At the commencement of the last fiscal year 180 money-orders were in operation authorized to issue orders payable in Switzerland to pay orders drawn in that country. Three offices were closed during the year, making a total of 183 in operation at the end of the year.



The number of such orders issued in the United States during the year was 5,135, amounting to \$96,171.25, of which amount \$459.13 was afterward repaid to the remitters, and the number paid in the United States was 2,010, amounting to \$55,820.99.

The fees received for Swiss orders issued amounted to \$2,758.50.

A comparison of this business with that of the previous year exhibits an increase of \$3,830.51, or 4.21 per cent., in the amount of orders issued; of \$2,034.27, or 3.78 per cent., in the amount of orders paid; and of \$462.25, or 20.13 per cent., in the amount of fees received. The Auditor's statement of the Swiss revenue and expense account for the year ended June 30, 1878, is as follows:

Fees received .....	\$2,635 25
Paid for commissions and clerk hire.....	\$778 44
Paid for incidental expenses .....	1 99
Excess of commissions paid Switzerland.....	371 27
Cost of exchange.....	549 39
Net revenue.....	934 16
	<hr/> 2 635 25

#### EXCHANGE OF MONEY-ORDERS WITH GREAT BRITAIN.

At the commencement of the last fiscal year 1,014 money-order offices were in operation authorized to issue orders payable in the United Kingdom of Great Britain and Ireland, and to pay orders drawn in that country. Eight offices were added to the list during the year, and one was discontinued, leaving a total of 1,021 in operation at its close.

The number of such orders issued in the United States during the year was 64,310, amounting to \$894,859.25, of which amount \$2,242.07 was afterward repaid to the remitters, and the number paid was 19,740, amounting to \$345,761.09.

The fees received for orders issued amounted to \$27,753.

A comparison of this business with that of the previous year shows an increase of \$87,675.93, or 10.86 per cent., in the amount of the orders issued, a decrease of \$17,442.09, or 4.80 per cent., in the amount of the orders paid; and an increase of \$2,677.25, or 10.67 per cent., in the amount of fees received.

The Auditor's statement of the revenue and expense account with Great Britain for the year ended June 30, 1878, is as follows:

Amount received for fees on orders issued.....	\$25,075 75
Net loss.....	10,178 82
Total .....	<hr/> 35,254 57
Amount paid for commissions and clerk-hire .....	\$21,351 22
Amount paid for incidental expenses .....	200 96
Excess of commissions paid .....	4,435 58
Cost of exchange .....	9,266 81
	<hr/> 35,254 57

#### EXCHANGE OF MONEY-ORDERS WITH GERMANY.

At the commencement of the last fiscal year 659 money-order offices were in operation authorized to issue orders payable in the German

Empire, and to pay orders drawn in that country; and 14 added to the list during the year, making a total of 673 in its close.

The number of such orders issued in the United States during the year was 47,342, amounting to \$829,788.36, of which amount \$1,805 afterward repaid to the remitters; and the number paid in Germany amounting to \$639,542.68.

The fees received for orders issued amounted to \$22,927.

A comparison of this business with that of the previous year shows an increase of \$46,371.52, or 5.92 per cent., in the amount of orders issued; a decrease of \$27,270.02, or 4.09 per cent., in the amount of orders paid, and an increase of \$1,316.50, or 6.09 per cent., in the amount of fees received.

The Auditor's statement of the revenue and expense account for Germany for the year ended June 30, 1878, is as follows:

Amount received for fees on orders issued .....	
Amount paid for commissions and clerk hire .....	\$11,834
Amount paid for incidental expenses .....	58
Excess of commissions paid Germany .....	1,805
Cost of exchange .....	2,501
Net revenue .....	5,410

#### EXCHANGE OF MONEY-ORDERS WITH CANADA

At the commencement of the last fiscal year 375 money-orders were in operation, authorized to issue orders payable in the United States, and to pay orders drawn in that country. No new orders were added to the list during the year.

The number of such orders issued in the United States during the year was 16,231, amounting to \$316,283.98, of which amount \$1,805 was afterward repaid to the remitters; and the number paid in Germany amounting to \$339,072.45.

The fees received for orders issued amounted to \$7,217.80.

A comparison of this business with that of the previous year shows an increase of \$56,901.55, or 21.93 per cent., in the amount of orders issued; a decrease of \$112.44, or 0.03 per cent., in the amount of orders paid, and an increase of \$1,163.30, or 19.21 per cent., in the amount of fees received.

The Auditor's statement of the revenue and expense account for Canada for the year ended June 30, 1878, is as follows:

Amount of fees received on orders issued .....	
Excess of commissions received .....	
Total .....	
Amount paid for commissions and clerk-hire .....	\$5,410
Amount paid for incidental expenses .....	99
Net revenue .....	4

## EXCHANGE OF MONEY-ORDERS WITH ITALY.

At the commencement of the last fiscal year 142 money-order offices were in operation, authorized to issue orders payable in the Kingdom of Italy, and to pay orders drawn in that country. One office was added to the list during the year, making a total of 143 in operation at its close.

The number of such orders issued in the United States during the year was 4,070, amounting to \$103,352.11, of which amount \$140 was afterward repaid to the remitters; and the number paid was 349, amounting to \$10,040.69.

The fees received for orders issued amounted to \$2,760.25.

A comparison of this business with that of the previous year exhibits a decrease of \$2,181.42, or 2.06 per cent., in the amount of orders issued; an increase of \$2,169.57, or 27.81 per cent., in the amount of the orders paid, and a decrease of \$56.25, or about 2 per cent., in the amount of fees received.

The Auditor's statement of the revenue and expense account with Italy, for the year ended June 30, 1878, is as follows:

Amount of fees received on orders issued.....	\$2,816 50
Net loss.....	948 04
Total.....	3,764 54
Amount paid for commissions and clerk-hire.....	\$598 41
Amount paid for incidental expenses.....	28 60
Excess of commissions paid Italy.....	962 58
Cost of exchange.....	2,174 95
	<hr/> 3 764 54

## GENERAL FINANCIAL RESULTS OF THE MONEY-ORDER BUSINESS.

The gross number of domestic and international money-orders issued during the year was 6,519,331, amounting to \$90,495,095.97; and the gross number paid, 6,428,929, amounting to \$88,817,294.16.

The net revenue derived from the transactions of the domestic money-order business is \$223,960.77, as reported by the Auditor, without taking into account the additional expenses, paid out of appropriations, hereinafter to be mentioned.

In addition to the expenses enumerated in the foregoing statement made by the Auditor, the following items of expense, amounting to \$210,665.56, which are fairly chargeable to the money-order system, were paid out of general appropriations, viz: Salaries to 30 employés in the Superintendent's office, \$40,100; salaries to 101 employés in the money-order division of the Auditor's office, \$116,280; books, blanks, and printing furnished for the money-order system by the Public Printer, \$49,285.56; and books, blanks, and stationery not included in the last item, estimated at \$5,000. After deducting the above-enumerated items of expense from the total net revenue, stated as above at \$223,960.77,

there remains an absolute net profit to the credit of the system amounting to \$13,295.21 in excess of all legitimate expenses.

The sum of \$219,226.83, being the net proceeds of the money-order business for the fiscal year ended June 30, 1879, on account of the international business for the previous year, by the auditor, has been deposited with the Treasury Department to the credit of the United States for the service of the Post-Office Department. The sum of \$191,571.23, due the postage account, the excess of transfers, heretofore mentioned, from that account, and the money-order account, has been paid over.

#### FOREIGN MAILS.

The total weights of the mails dispatched from the United States to the countries of the Universal Postal Union (the Dominion of Canada excepted) during the year were as follows: Letters, 102,980,000, equal to 3,632,910 ounces; printed matter and samples of newspapers, 444,141,226 grams, equal to 15,668,291 ounces, being an increase over 1878 of 232,199 ounces of letters, and 1,139,429 ounces of matter and samples. A statement is appended of the weights of the mails dispatched to each postal union country. (Pages 405-409.)

The number of letters exchanged with other countries not in the Universal Postal Union, the Dominion of Canada excepted, was 685,188, of which number 396,915 were sent to and 288,273 received from such countries.

#### COST OF OCEAN MAIL SERVICE.

The payments made during the fiscal year 1879 for the transportation of United States mails amounted to \$198,908.06, being an increase of \$1,631.91 over the amount paid for the same service during the year 1878. This sum \$153,749.64 was paid for the trans-Atlantic service, \$34,154.03 for the trans-Pacific service, and \$34,154.03 for the service to the West India Islands, Mexico, Central American and South American States, Venezuela, Honduras, Brazil, and Uruguay.

The particulars of these several services are appended to the report on page .

The additional sum of \$23,053.47 was recognized and paid for the trans-Atlantic transportation of British closed mails from New York to Great Britain from January 1, 1877, to September 30, 1878, and credited therefor by this department in the quarterly accounts with the British Post-Office. Adding to this sum the payments made on account of the United States ocean service, the total amount paid during the year for the different lines of ocean mail steamers, for transportation of mails to foreign countries was \$226,961.53.

The aggregate amount of the quarterly balances paid to the United States during the year on the settlement of the postage accounts with the countries of the Universal Postal Union was \$54,469.30, and



gate amount of the quarterly balances paid by the United States to the same countries was \$38,275.79.

The sums paid to this department by other postal union administrations on account of the United States sea and territorial transit of open and closed mails amounted to 514,633.53 francs (\$101,675.39); and the sums paid by this department to other postal union administrations for the foreign sea and territorial transit of United States mails amounted to 257,291.39 francs (\$50,429.11).

#### UNIFORM RATES OF POSTAGE TO ALL COUNTRIES OF THE UNIVERSAL POSTAL UNION.

The ratifications by the United States of the Universal Postal Union Convention were duly exchanged at Paris on the 26th February, 1879, and its provisions were carried into operation on the 1st of April, 1879, superseding from that date the general postal union treaty concluded at Berne, October 9, 1874.

Article 5 of the Paris Convention establishes general rates of postage throughout the entire extent of the Universal Postal Union, with authority, however, to levy additional charges for the correspondence subjected to the sea-transit rates of 15 francs per kilogram of letters and postcards, and 1 franc per kilogram of other articles; but as the correspondence sent from the United States to distant countries and colonies of the union to which these sea-transit rates are applicable, constitute a very inconsiderable part of the mail matter sent to postal union destinations, I deemed it expedient, in view of the desirability of fixing uniform postage rates, to waive the right to levy additional charges upon the correspondence addressed to such countries and colonies; and accordingly issued an order directing the regular rates of union postage to be levied and collected in the United States on all correspondence exchanged within the Universal Postal Union (Canada excepted), without regard to distance or routes of transmission; thus realizing at once in our postal union relations uniformity of postal charges, the chief result which the system of the Universal Postal Union is designed ultimately to accomplish throughout the world.

#### ADMISSIONS TO THE UNIVERSAL POSTAL UNION.

Since the conclusion of the Convention of Paris, the following accessions have been made to the Universal Postal Union:

1. The British Colonies of Newfoundland, Gold Coast, Senegambia, Lagos, Sierra Leone, Falkland Islands, and British Honduras, admitted from April 1, 1879.
2. The principality of Bulgaria, admitted from April 1, 1879.
3. The Leeward Islands (British), viz: Antigua, Dominica, Montserrat, Nevis, St. Christopher, and the Virgin Isles, admitted from July 1, 1879.

4. The Republic of Liberia, admitted from July 1, 1879.

5. The Republic of Honduras, admitted from October 1, 1879.

The United States of Venezuela have declared diplomatic adhesion to the Universal Postal Union from the 1st of January, 1880.

The Republic of Chili, which was a party to the Convention of Paris, was unable to carry it into operation on the 1st of April, 1880, and its adhesion to the union has been indefinitely postponed.

#### INDEMNITY FOR LOST REGISTERED ARTICLES.

In my last report I recommended the necessary legislation in this department to accept the general regulation of the Universal Postal Union relative to the payment of a limited indemnity for articles lost or destroyed in the United States postal service. The Convention of Paris provides for the payment of 50 francs to the owner of a lost registered article, by the administration upon whose territory or in whose maritime service the loss occurred, except in case of *force majeure*, but stipulates as a condition that the administrations of the countries beyond Europe shall have obtained legislative authority to subscribe to it. The payment of indemnities for registered articles lost or stolen in the mails is not sanctioned by our laws or applied in our domestic service, though it is very generally practiced in other countries of the Universal Postal Union with which we exchange registered correspondence, and I therefore renew the request that authority be given by law to effect this provision of the Paris Convention, both as to domestic and foreign registered matter.

#### COLLECTION OF CUSTOMS DUTIES UPON FOREIGN BOOKS BY MAIL.

The annoying inconveniences and delays to which American authors and scholars have been subjected in obtaining single volumes mailed to them from abroad, in consequence of the regulation requiring all dutiable articles to be delivered to officers of the customs for collection of duties, have been remedied by a new regulation in pursuance of the authority given in section 17 of the act of March 3, 1879, which provides that books received from countries or territories of the Universal Postal Union, which are found to be dutiable, when addressed to post-offices other than the exchange office of the destination, may be promptly transmitted by mail to the addressees, charged with the amount of customs duties levied thereon; which amounts payable at the offices of destination are required to collect on delivery by first mail thereafter, under registration, to the collector of customs of the district in which the exchange post-office is situated.

Under the General Postal Union Treaty concluded at Berne, books received from postal-union countries which were chargeable with customs duties, were held to be unmailable matter, and were immediately returned to the country of origin, thus imposing a complete embargo on the receipt of books by mail from abroad, and cutting off the facilities previously afforded by the mails for obtaining early copies of foreign literary and scientific works. The convention of Paris readopted the provision of the Berne treaty forbidding the transmission by mail of any packet whatever containing articles liable to customs duty, but added a stipulation that in case a packet falling under this prohibition should be delivered by one administration to another administration of the union, the latter was to proceed to dispose of it according to its interior laws and regulations. In pursuance of this provision the regulation of this department was modified by directing the delivery of dutiable articles by postmasters at exchange offices of receipt to collectors of the customs, with notice of such delivery to the addressees. Although this modified regulation effected an improvement in the treatment of dutiable books, it was not satisfactory either to the Treasury officials or the public, as it failed in many cases to secure the collection of the customs duties, and subjected addressees residing at places distant from ports of entry to vexatious delays and expenses incident to the employment of agents to pass their books through the custom-house. The new regulation obviates these delays and expenses, by insuring a prompt delivery of books at the office of destination in any part of the United States on payment of the customs duties, and cannot fail to satisfy those of our citizens who are accustomed to the use of the mails as the only practicable means of obtaining early access to foreign publications of scientific or literary interest.

#### TREATMENT OF OTHER DUTIABLE ARTICLES IN THE MAILS.

A similar regulation is needed for the treatment of other articles of mail matter received from foreign countries, which are subject by our laws to customs duty, and I respectfully recommend that the provision of section 17 of the act of March 3, 1879, authorizing the Secretary of the Treasury and the Postmaster-General to adopt regulations for the delivery to addressees in the United States of dutiable books, with collection of customs duties thereon, be extended to embrace all articles of dutiable matter received in the mails from foreign countries.

As soon as provision is made for the transmission by mail and delivery to addressees of any article of dutiable mail matter received from abroad, it will be possible for this department to conclude arrangements with other postal administrations for the reciprocal exchange of small objects of merchandise, for which no provision is made in existing postal treaties or arrangements with foreign countries. Special arrangements of this character, commonly known as "parcel posts," are in operation between most European countries with satisfactory results, serving as

important auxiliaries to commerce, and affording convenient facilities for the interchange of small articles of scientific, literary, and social interest and importance.

#### FOREIGN MAIL STATISTICS.

In order to obtain the necessary data for estimating approximately the number of letters, postal cards, newspapers, and other articles of every kind, matter, commercial papers, and samples of merchandise, and for the prepaid and unpaid postage thereon, exchanged in the mails with foreign countries, instructions have been issued to all United States post-offices for foreign mails to take an actual count semi-annually during the first seven days of October and April of each year, and to furnish such details as are required for statistical purposes, and to forward the same to the department to supply the International Bureau of the Universal Postal Union with the particulars of the United States postal service as required by that bureau.

#### PROTECTION TO POSTMASTERS IN PERSON AND PROPERTY.

I desire, respectfully, to call your attention to the fact that there is no United States statute imposing a penalty upon any one for assaulting or molesting a postmaster in the discharge of his official duties. In the case of revenue officers, and I earnestly request that Congress be urged to pass such a statute.

Since my last report a decree has been rendered in the case of the United States in and for the southern district of New York, in a suit brought by Christopher C. Campbell *vs.* Thomas L. James, postmaster at New York, for relief against alleged infringement of a patent for an improvement in post-office post-marking and canceling hand-stamps, granted to Marcus B. Norton on the 14th day of March, 1863, which post-office post-marking and canceling hand-stamps claimed, have been for more than ten years and are now in general use in all the principal post-offices of this country. When suit was instituted against Mr. James, the United States attorney for the southern district of New York was instructed by the Attorney-General to prosecute and defend the suit. The case was tried upon its merits, and decided adversely to the defendant. The court held substantial infringement of the patent was a valid one; that the defendant had infringed and was liable for costs, charges, and damages, and ordered an account to be taken of the profits, gains, and advantages which have in any way been derived from, or made, or which had arisen or accrued on account of the infringement, and also of the damages in addition thereto, if any, which the plaintiff has sustained by reason of the said infringements. Such an account is now being taken. The validity of this patent and the utility of the invention were adjudged and affirmed, I am informed, in the United States circuit court for the northern district of New York, and also by the Court of Claims in 1867. Reports to the same



made by committees in the Thirty-ninth, Forty-first, and Forty-second Congresses.

Other postmasters than Mr. James are threatened with suits for like infringements; and there is great danger that they will be subjected to expense, unless some satisfactory adjustment shall be made.

In this connection, I desire to call attention to the fact that there is no provision of federal law to secure "certificates of probable cause" to United States officials, other than Treasury officials, in cases of adverse judgments for acts done in their official capacity. In the present instance, Mr. James, as postmaster, uses canceling-stamps furnished by this department. The court adjudges him to have infringed a patent by such use.

The judgment for damages is against him personally. In like cases, the property of Treasury officials is protected by law from levy. I submit that similar protection is due to all government employes, when acting in the line of their duty.

#### THE NEW CLASSIFICATION OF MAIL-MATTER.

The law providing for a new classification of mail-matter, and readjusting the rates of postage thereon, passed at the last session of the Forty-fifth Congress, which went into effect on the first day of May last, has given universal satisfaction.

In framing regulations to carry it into successful operation, the department has endeavored to display the same liberal spirit which actuated Congress in its passage. Such reports as have been received from various officers of the service show that it is better understood by the public than the former law, has served very much to diminish complaint against the administration of the different post-offices throughout the country, and has removed very much of the friction that existed in the service under the old law. Especially is this true in respect to second-class matter.

The difficulties which presented themselves under the old law in determining the boundary line between periodical publications of a general character and those which are designed primarily for advertising purposes, have been very materially reduced by a simple regulation providing for the entry at the post-office where mailed of any publication which had been determined to be of the second class, and the printing of a certificate of entry on each copy of the publication issued. This is practically in accordance with the recommendation made by me in my report for 1877, with this exception, that the entry is only made upon the voluntary request of the publisher or publishers.

As an indication of the popularity of this regulation, I call attention to the fact that up to the first day of November about twenty-five hundred publications have been entered in accordance with the regulations, which is nearly, if not quite, one-third of all those mailed as second-class matter, including among the number nearly all the leading publications

of the country. I am confident that the remaining ones nearly all, of them enter, and that when they shall have so solution of this vexed question will be reached.

#### LOTTERY LETTERS.

By the act of July 12, 1876 (19 Statutes, p. 90), section 389 Statutes was amended by striking out the word "illegal" pre word "lottery," and it is suggested that sections 3929 and 404 Statutes, be also amended by striking out the word "fraudul ceding the word "lottery" in each section, which will make tion more harmonious and effective.

It would aid the department in the execution of the intent if the provision of section 3929, requiring the return to the registered letters addressed to such schemes, were in term to include all letters so addressed.

Under the sections referred to orders have been issued, t day of October, 1879, against 117 individuals or companies fraudulent schemes, requiring the return of registered let writers, and the refusal to issue or to pay to such persons or any money orders, and directing the return of the sum indic sender on application. But one of these orders has been s contested and its revocation demanded and granted.

On the 4th day of October, 1879, upon an opinion given by ant Attorney-General for the Post-Office Department, an issued to postmasters directing them to refuse to mail or regi or circulars addressed to lottery companies, or to individuals dressed to them as agents for such companies. The opinion u this order was based was in brief that under section 389 Statutes of the United States, the only recognition in the of lottery companies is the declaration that "no letter or c cerning lotteries" \* \* \* "shall be carried in the mails posing a fine upon "any person who shall knowingly depo anything to be conveyed by mail in violation of this section entire postal correspondence of a lottery company acting charter is a violation of this prohibition, and that an agent in tion of his agency can claim no right not accorded to his that a lottery company chartered by State authority is not the United States, and correspondence concerning its busi excluded by law from the mails, such company cannot e facilities. Under this order a large number of letters add lottery company, or to a private individual as an agent of pany, were held by the postmaster at Louisville, Ky., and s once instituted by said agent against the postmaster, whic structions from the Attorney-General of the United States, plication to him, were defended by the United States distri for that district, and, as representing the department, by th

Attorney-General for the Post-Office Department. The decision has not yet been rendered in the United States circuit court, and I will avail myself of that decision, when announced, to communicate further the views of this department upon this subject.

Upon the question whether, under the present statute, the correspondence reaching an individual addressed to him personally under seal, can be held, although the person openly and notoriously advertises himself as an agent of a lottery company and invites letters "concerning lotteries" to be thus addressed to him, and communications so addressed reach the office in extraordinary numbers, the department is not fully advised. Whether an individual may forfeit his right to use the mail for legitimate purposes by voluntarily mingling such correspondence with prohibited matter, so that the department must carry both or neither, is a question upon which additional legislation might render the purpose of the statute altogether unquestionable.

The carriage by the mail of newspapers, containing lottery advertisements soliciting violations of the postal laws, renders the successful enforcement of the statute now in force still more difficult.

The department has caused inquiry to be made by its special agents and from postmasters at various points to enable it to form a proximate estimate of the quantity of letters and circulars "concerning lotteries" which reach their post-office of destination and are there withheld from delivery by reason of the evidence apparent upon the matter itself of its illegal character. The details are as yet too incomplete to lay before you, but they already disclose the fact that the postal service is used to an almost inconceivable extent to foster and sustain these fraudulent schemes.

#### OUR POSTAL SERVICE COMPARED WITH THAT OF ENGLAND AND FRANCE.

In accordance with the suggestion made in my annual report for 1877, Mr. W. A. Knapp, chief clerk of the department, who had been requested by the Secretary of the Treasury to proceed to London, England, upon business connected with refunding, was directed by me to prolong his stay in London for a sufficient time to examine the operations of the British postal service, and to visit France to inspect the postal service of that country. The results of his observations will be found appended to this report (pages 307-329), and his suggestions are commended to the serious consideration of Congress. I desire to make public acknowledgment of my appreciation of the kindness and courtesy displayed by the postal administrations of England and France in affording to the representative of this department every possible facility in pursuing his investigations.

#### DISPOSAL OF VALUELESS PAPERS ON FILE.

This department is put to great inconvenience by the accumulation of records, files, and papers, many of which are of no value at this

The room which they occupy is very much needed for other many of them are stored in the upper story of the department and are of such a nature as to threaten the safety of the case of fire. I have not felt authorized to order the destruction of these papers, without authority given by Congress. I recommend that Congress enact a law giving the Postmaster authority to destroy or sell for waste paper such records as are mentioned in the accompanying report of the Auditor as of no permanent value.

#### THE NEW EDITION OF THE POSTAL LAWS AND REGULATIONS.

In accordance with the provisions of section 1 of the act of 1879, providing for the preparation and publication of a new edition of the postal laws and regulations, appropriating \$20,000 for the purpose, I have authorized the Postmaster-General to designate two officers of the department to prepare such work, Messrs. A. H. Bissell, and Thomas B. Kirby, stenographer of the department, were designated to edit and superintend the publication of the same. This has been done to the entire satisfaction of the department, and the Postmasters and employes of the railway mail service have been furnished with the new regulations. Frequent applications are made to the department by the public for copies of this book, which the department is unable to supply.

I would therefore recommend that the Public Printer be authorized to print a new edition from the stereotype plates, to be sold to the public at cost.

#### THE POSTAL GUIDE.

A contract was made with Houghton, Osgood & Co., of Boston, for the continuation of the publication of the Postal Guide for the present fiscal year. The form of the Guide has been changed, and the lists of post-offices are now to be published annually, with corrections. The monthly numbers of the Guide also contain the orders and rulings of the department, and the necessity for issuing separate orders to postmasters is thus obviated, thereby saving much expense and a large amount of clerical labor in the department. The appropriation is only sufficient for an edition of 46,500 copies, which is now barely enough to supply the officers and employes of the railway mail service, and will be entirely inadequate for the next year. I recommend that the appropriation for next year be \$30,000, and that authority be given to the Postmaster-General to contract for the publication of the Guide for a term of five years, as was done by the act of 1874. The usefulness of the Postal Guide in its present form for maintaining uniformity in the postal system, and thereby increasing the efficiency of the service, is so great that I can hardly conceive of any misfortune than the failure of Congress to provide for a new edition.



of its publication and an extension of its circulation to keep up with the growth of the postal service. If, as is hoped, authority is given to the Postmaster-General to contract for the publication of the Guide for a term of five years or less, he should be authorized, in case of necessity, to continue the contract with the present publishers for another year, in order to avoid a discontinuance of the publication pending the awarding of a new contract. It is doubtful if as favorable a contract as the present could be made in the existing state of the market for labor and material.

#### THE WASHINGTON CITY POST-OFFICE.

In accordance with the joint resolution of June 27, 1879, the commission appointed to lease a building in Washington, D. C., for the purpose of a city post-office, have leased the building known as the Seaton House, on Louisiana avenue and C street, near Seventh street, for the term of five years, at an annual rental of \$5,000. The removal of the city post-office from the department building will greatly assist in the transaction of business by affording much-needed additional room.

#### THE PHILADELPHIA POST-OFFICE.

Attention is called to the urgent necessity for the prompt completion of the new post-office building at Philadelphia, Pa. The new building could, with adequate appropriations, be made ready for occupancy in six months, and the building now occupied is entirely too small for the proper transaction of the postal business of the second city in the Union.

#### RESULTS OF A COUNT OF ALL MATTER MAILED.

In order to enable the department to procure reliable statistics of the amount of domestic mail-matter actually transmitted in the United States mails, an annual count has been ordered upon the first seven days of November in each year of all matter mailed at all post-offices and postal cars. The returns for the count of November, 1879, now coming in when tabulated will show with almost entire accuracy the business transacted by this department. The count at New York City shows that there were mailed at that office during the first seven days of November, 1879, 2,352,308 letters, 648,353 postal cards, 2,561,011 pieces of second-class matter, 1,513,530 pieces of third-class matter, and 118,088 pieces of fourth-class matter, making a grand total of 7,193,290 pieces of mail matter originating at that office during the week. The details of the count at a few of the principal cities of the Union and in the Railway Mail Service will be found appended to this report, pages 352-367.

Very respectfully, your obedient servant,

D. M. KEY,  
*Postmaster-General.*

The PRESIDENT.

**PAPERS**  
**ACCOMPANYING**  
**REPORT OF THE POSTMASTER-GENERAL**

**REPORT OF THE FIRST ASSISTANT POSTMASTER-GENERAL.**

POST-OFFICE DEPARTMENT,  
OFFICE OF THE FIRST ASSISTANT POSTMASTER-GENERAL,  
*Washington, D. C., November*

SIR: I submit herewith the following statistical tables in detailed forms the operations of the free-delivery and appointment division of this office for the fiscal year ended 1879. The increased business of those divisions over that of the previous fiscal year, as shown by these statements, is of a very satisfactory character.

Very respectfully,

JAS. N. TYLER,  
*First Assistant Postmaster-General.*

Hon. D. M. KEY,  
*Postmaster-General.*

*Total operations of the appointment division of the office of the First Assistant Postmaster-General for the year ended June 30, 1879.*

States and Territories.	Post-offices.				Postmaster-General's Office.	
	Established.	Discontinued.	Names and altes changed.	Appointments on change of names and altes.	Resigned and commissions expired.	Removed.
Alabama.....	110	28	7	9	192	29
Alaska.....			1	1	2	
Arizona.....	26	5	8	3	23	3
Arkansas.....	146	62	16	7	219	18
California.....	52	30	11		100	6
Colorado.....	45	17	1	1	83	7
Connecticut.....	6	2	3	2	25	4
Dakota.....	87	14	20	5	47	14
Delaware.....	1				7	1
District of Columbia.....					1	
Florida.....	44	9	5	2	49	12
Georgia.....	97	30	12	1	149	9
Idaho.....	14	14	5	3	24	1
Illinois.....	46	27	17	2	313	15
Indiana.....	64	25	4	3	283	33
Indian Territory.....	15	7	2	1	19	1
Iowa.....	57	46	11	1	217	20
Kansas.....	212	49	53	38	249	13

Total operations of the appointment division, &amp;c.—Continued.

States and Territories.	Post-offices.				Postmasters.			Total number of cases.
	Established.	Discontinued.	Names and sites changed.	Appointments on change of names and sites.	Resigned and commissions expired.	Removed.	Deceased.	
Kentucky .....	94	47	9	4	233	26	16	425
Louisiana .....	52	22		2	63	8	13	164
Maine .....	16	9	1		64	13	11	114
Maryland .....	32	8	5	3	63	6	10	124
Massachusetts .....	9	3	1		46	3	6	68
Michigan .....	73	40	8	5	163	33	14	324
Minnesota .....	88	35	26	10	120	23	4	296
Mississippi .....	59	18	11	4	82	7	1	191
Missouri .....	95	55	23	4	299	19	16	507
Montana .....	23	16	3	2	28	3	2	75
Nebraska .....	85	32	26	18	113	18	4	278
Nevada .....	22	4	3	2	27	5	1	63
New Hampshire .....	9	5	2	1	28	6	3	53
New Jersey .....	9	5	7	3	47	5	1	84
New Mexico .....	21	15	5		23	2	2	68
New York .....	64	13	10	5	228	49	32	396
North Carolina .....	107	42	18	11	162	16	3	354
Ohio .....	79	25	7		271	23	15	420
Oregon .....	49	24	7	3	74	4	3	161
Pennsylvania .....	78	35	24	5	330	27	26	526
Rhode Island .....	1		1	1	6		4	12
South Carolina .....	37	14	9	1	72	2	1	135
Tennessee .....	109	31	15	4	212	25	20	412
Texas .....	173	86	10	7	263	7	16	555
Utah .....	18	10	4		28	4	2	66
Vermont .....	4	3			45	2	2	56
Virginia .....	106	45	9	6	183	10	11	364
Washington .....	36	7	5		52	3		103
West Virginia .....	35	23	6	3	118	6		189
Wisconsin .....	58	34	21	4	165	17	6	301
Wyoming .....	13	8	2		12			35
Total .....	2,676	1,070	480	187	5,627	558	378	10,778

Statement of the operations of

Post-offices.	Number of carriers in service June 30, 1879.	Delivered.			
		Mail.		Local.	
		Letters.	Postal cards.	Letters.	Postal cards.
Albany, N. Y.	37	2,192,106	407,872	232,938	193,511
Allegheny, Pa.	11	1,024,187	192,366	128,168	71,138
Atlanta, Ga.	6	779,185	289,324	71,983	78,633
Baltimore, Md.	67	5,427,752	984,220	1,230,360	924,373
Bangor, Me.	4	270,670	60,683	24,363	7,921
Boston, Mass.	169	10,049,114	2,402,886	4,719,630	2,307,273
Bloomington, Ill.	6	686,570	136,772	24,822	26,333
Brooklyn, N. Y.	93	5,851,622	1,288,971	1,457,551	1,070,921
Buffalo, N. Y.	36	3,507,303	478,456	477,296	393,822
Burlington, Iowa	4	609,753	112,689	39,939	33,522
Camden, N. J.	6	844,842	134,086	56,828	43,067
Charleston, S. C.	8	502,718	117,179	62,022	70,256
Chicago, Ill.	162	19,562,513	3,543,725	3,713,585	2,256,394
Cincinnati, Ohio	73	7,334,321	1,115,675	1,610,226	970,286
Cleveland, Ohio	34	3,937,299	1,033,438	572,017	335,699
Columbus, Ohio	12	1,223,551	300,453	103,305	104,694
Covington, Ky.	5	293,814	71,677	20,731	18,860
Davenport, Iowa	8	560,775	120,615	38,977	31,867
Dayton, Ohio	12	1,115,090	296,815	120,074	84,381
Des Moines, Iowa	7	582,213	186,557	55,435	46,939
Detroit, Mich.	31	4,524,279	905,171	583,332	221,045
Dubuque, Iowa	5	544,294	132,851	27,586	26,872
Easton, Pa.	6	983,982	451,670	102,518	112,188
Elizabeth, N. J.	6	439,511	93,482	65,724	26,262
Elmira, N. Y.	7	779,591	173,703	52,917	25,624
Erie, Pa.	7	667,053	59,105	56,861	39,014
Evansville, Ind.	7	584,395	171,006	34,136	41,781
Fall River, Mass.	*6	470,568	38,513	26,127	14,516
Fort Wayne, Ind.	7	831,190	92,968	83,144	85,438
Grand Rapids, Mich.	8	964,795	251,186	129,563	70,705
Harrisburgh, Pa.	6	386,308	105,293	27,379	25,235
Hartford, Conn.	11	928,447	186,086	205,685	112,024
Hoboken, N. J.	4	267,074	74,646	17,678	26,007
Indianapolis, Ind.	23	2,870,903	557,407	313,597	183,929
Jersey City, N. J.	18	968,828	190,479	177,013	125,532
Kansas City, Mo.	11	2,223,228	455,740	157,140	101,187
Lafayette, Ind.	5	331,401	108,721	30,860	13,741
Lancaster, Pa.	5	546,596	160,426	34,190	23,015
Lawrence, Mass.	8	697,423	74,055	52,586	60,817
Leavenworth, Kans.	5	394,782	74,372	16,390	15,158
Louisville, Ky.	39	3,127,595	737,445	378,213	425,042
Lowell, Mass.	10	633,738	108,072	90,340	50,519
Lynn, Mass.	7	595,074	138,557	44,670	72,857
Manchester, N. H.	5	570,551	134,373	27,543	38,594
Memphis, Tenn.	13	1,369,770	177,608	86,939	85,245
Milwaukee, Wis.	20	3,342,681	493,192	385,809	373,293
Minneapolis, Minn.	10	767,792	126,753	87,506	68,878
Mobile, Ala.	6	320,997	62,202	30,597	21,921
Nashville, Tenn.	10	1,194,294	282,116	95,650	75,791
Newark, N. J.	24	1,930,774	515,603	413,784	292,417
New Bedford, Mass.	7	741,025	64,173	56,917	21,320
New Haven, Conn.	16	907,390	159,408	125,863	82,150
New Orleans, La.	47	1,789,745	235,467	378,573	267,048
New York, N. Y.	440	42,938,460	7,264,740	24,759,629	9,161,028
Norfolk, Va.	5	539,644	141,704	45,760	45,441
Oakland, Cal. (9 mos.)†	6	250,447	32,290	19,745	11,367
Omaha, Nebr.	6	706,735	114,661	57,686	51,347
Oswego, N. Y.	6	420,641	100,996	26,810	14,000
Paterson, N. J.	7	478,901	75,143	49,307	32,230
Peoria, Ill.	8	653,863	185,083	38,796	32,478
Petersburgh, Va.	5	455,975	95,378	15,908	17,373
Philadelphia, Pa.	253	23,497,592	4,378,537	14,015,099	5,663,496
Pittsburgh, Pa.	34	2,259,093	512,319	524,210	290,312
Portland, Me.	10	654,407	177,980	68,190	86,217
Pottsville, Pa.	4	248,893	70,921	22,352	11,616
Poughkeepsie, N. Y.	6	625,400	89,677	60,432	50,063
Providence, R. I.	21	1,151,253	274,009	284,257	139,279
Quincy, Ill.	7	658,364	180,566	47,143	64,334
Reading, Pa.	8	725,430	161,584	56,358	54,298
Richmond, Va.	18	1,266,702	341,913	105,536	100,104
Rochester, N. Y.	22	2,527,371	286,816	255,567	265,928
Saint Joseph, Mo.	7	843,775	87,323	72,119	47,305

\* Two carriers appointed May 1, 1879.

† Established October



## REPORT OF THE POSTMASTER-GENERAL.

1059

system for the year ending June 30, 1879.

Collected.			Pieces handled.		Cost of service (including incidental expenses).			Postage on local matter.
Lottery.	Postal cards.	Newspapers.	Aggregate.	Per carrier.	Aggregate.	Per piece.	Per carrier.	
1, 342, 902	378, 331	190, 225	5, 006, 081	219, 855	\$20, 585 66	3.45	\$762 43	32, 083 31
530, 702	128, 434	94, 016	2, 835, 978	257, 816	8, 306 56	2.93	755 14	3, 039 03
539, 376	211, 013	44, 012	2, 693, 055	432, 176	4, 584 14	1.76	764 02	3, 147 38
7, 084, 292	1, 566, 679	340, 970	20, 023, 091	298, 852	57, 071 46	2.85	851 81	38, 603 82
929, 443	98, 560	29, 374	972, 235	243, 050	3, 127 58	3.22	781 89	1, 101 88
14, 323, 638	4, 983, 287	1, 883, 972	45, 609, 088	299, 676	139, 256 84	3.05	824 00	172, 460 25
221, 902	100, 424	45, 937	1, 549, 632	258, 772	4, 611 54	2.97	768 59	1, 497 02
4, 123, 120	1, 623, 159	597, 099	18, 578, 812	199, 772	77, 470 11	4.17	833 01	64, 120 10
2, 545, 788	793, 748	246, 019	10, 598, 904	294, 247	50, 036 74	2.83	834 35	15, 243 75
397, 647	130, 845	155, 875	1, 934, 644	822, 441	4, 487 44	2.34	742 91	2, 474 56
287, 687	80, 343	57, 652	1, 790, 551	298, 425	4, 646 15	2.60	774 36	2, 240 90
803, 561	124, 662	59, 174	1, 550, 564	193, 920	6, 087 97	3.90	757 24	2, 655 90
22, 049, 115	5, 211, 788	6, 987, 780	69, 723, 144	430, 390	137, 000 07	1.96	845 68	123, 642 05
6, 181, 900	1, 377, 175	556, 679	21, 641, 550	296, 432	62, 782 41	2.90	859 35	54, 103 46
2, 835, 054	1, 115, 370	433, 249	12, 390, 546	363, 545	30, 603 63	2.48	900 11	28, 032 14
787, 965	280, 433	74, 248	3, 650, 378	804, 695	9, 583 36	2.62	798 61	4, 685 93
130, 569	34, 268	14, 032	773, 859	154, 679	8, 616 76	4.68	723 35	2, 932 63
297, 133	109, 232	28, 554	1, 587, 474	198, 434	5, 937 82	3.74	743 23	2, 112 00
789, 398	304, 442	331, 792	3, 782, 481	811, 040	9, 265 38	2.48	771 28	4, 055 98
589, 437	259, 481	85, 401	2, 239, 830	818, 119	5, 486 04	2.45	788 72	2, 678 56
1, 675, 002	477, 122	252, 389	11, 428, 725	368, 609	27, 348 06	2.39	882 19	15, 598 15
498, 020	170, 920	44, 584	1, 808, 323	361, 665	3, 714 15	2.05	742 83	1, 142 06
826, 597	265, 314	436, 722	3, 719, 576	619, 929	4, 582 92	1.23	763 82	3, 474 24
210, 605	68, 445	27, 851	1, 308, 280	218, 047	4, 734 64	3.62	789 11	1, 814 52
289, 132	89, 951	33, 503	1, 777, 052	253, 885	4, 969 64	2.80	709 95	2, 017 38
278, 325	83, 628	28, 930	1, 678, 306	239, 758	5, 563 61	3.31	794 80	2, 359 82
401, 328	154, 790	54, 808	2, 011, 001	287, 286	5, 592 07	2.78	798 87	1, 524 88
173, 968	23, 249	80, 244	1, 107, 482	184, 580	3, 184 79	2.87	530 80	2, 081 61
644, 871	100, 097	90, 950	2, 619, 180	374, 169	5, 445 00	2.77	777 86	3, 823 88
777, 235	233, 394	74, 347	3, 081, 700	385, 212	6, 192 36	2.01	774 04	3, 864 33
148, 501	58, 785	12, 435	1, 067, 371	177, 895	4, 498 07	4.21	749 68	1, 866 60
676, 325	141, 316	90, 429	3, 143, 624	285, 775	8, 028 23	2.55	729 84	6, 897 53
118, 215	50, 118	8, 314	665, 821	166, 455	2, 958 24	4.44	739 56	10, 872 55
1, 756, 895	583, 633	256, 843	8, 068, 267	288, 152	23, 664 92	2.93	843 18	5, 675 38
591, 514	175, 010	63, 871	2, 826, 452	157, 025	12, 588 37	4.45	699 35	6, 736 86
1, 086, 006	349, 047	330, 826	5, 633, 343	510, 668	8, 895 19	1.56	808 65	1, 103 84
203, 743	77, 603	27, 629	1, 056, 317	211, 263	8, 648 95	3.45	729 79	2, 996 17
160, 791	49, 417	11, 878	1, 244, 624	248, 925	3, 809 02	8.05	761 80	2, 004 01
747, 326	86, 457	64, 399	2, 371, 530	296, 441	6, 302 49	2.24	787 81	15, 528 67
546, 514	65, 225	70, 517	1, 253, 301	250, 660	3, 678 75	2.93	735 75	4, 123 08
2, 182, 090	720, 054	351, 634	9, 425, 420	314, 181	26, 609 19	2.82	890 97	1, 979 27
495, 910	102, 148	49, 054	1, 848, 997	184, 900	7, 516 85	4.06	751 68	2, 260 57
422, 817	151, 804	42, 462	1, 792, 817	256, 117	5, 714 11	3.19	816 30	1, 657 75
258, 543	82, 034	34, 229	1, 636, 075	327, 215	3, 841 08	2.35	768 22	14, 367 84
719, 084	163, 882	100, 189	3, 116, 427	239, 725	9, 839 78	8.15	756 91	3, 745 80
1, 662, 444	707, 506	298, 278	8, 537, 070	328, 350	23, 836 58	2.70	916 79	13, 786 27
525, 953	159, 000	66, 403	2, 391, 337	239, 134	8, 163 55	3.41	816 35	12, 089 20
349, 296	71, 304	140, 086	1, 357, 801	226, 300	4, 004 14	2.95	667 36	3, 786 27
477, 845	164, 750	89, 987	3, 243, 382	324, 338	7, 613 10	2.35	761 81	3, 786 27
1, 116, 921	377, 655	123, 036	5, 774, 529	240, 605	20, 216 24	3.50	842 34	12, 089 20
361, 900	83, 340	25, 495	1, 775, 239	253, 606	5, 580 30	3.14	797 19	14, 878 92
731, 335	99, 106	91, 054	2, 961, 551	185, 097	11, 772 45	3.08	735 78	13, 298 20
2, 814, 472	2, 093, 337	732, 013	8, 828, 249	187, 835	39, 520 29	4.48	840 85	13, 298 20
96, 612, 356	19, 521, 740	11, 218, 264	224, 589, 132	510, 430	352, 233 55	1.57	800 63	2, 498, 446 95
592, 099	164, 099	52, 147	1, 912, 812	382, 402	3, 821 52	1.90	764 30	2, 371 89
146, 843	25, 211	15, 938	648, 864	108, 144	3, 272 01	5.04	545 35	1, 232 92
548, 218	184, 633	45, 515	2, 189, 028	364, 838	4, 604 19	2.10	767 36	3, 801 16
281, 303	84, 533	34, 481	1, 231, 231	205, 205	4, 646 87	3.77	774 48	2, 022 94
276, 954	82, 496	51, 782	1, 505, 821	215, 117	5, 651 78	3.75	807 39	1, 796 77
458, 007	159, 157	81, 814	2, 014, 439	251, 805	6, 353 74	3.15	769 22	1, 567 73
255, 522	86, 090	54, 052	1, 290, 001	258, 000	3, 880 14	3.01	777 23	350, 545 76
32, 950, 094	7, 399, 106	6, 198, 521	107, 898, 566	426, 477	223, 954 18	2.07	885 19	17, 974 49
1, 668, 877	502, 078	230, 461	7, 378, 508	217, 015	29, 282 36	3.97	861 24	3, 819 58
813, 550	273, 035	132, 442	2, 865, 976	286, 598	7, 718 25	2.60	771 82	1, 999 69
148, 901	55, 795	49, 717	941, 222	235, 305	3, 079 84	3.27	769 06	14, 642 57
636, 470	133, 514	127, 592	2, 263, 821	377, 220	4, 618 70	2.04	769 78	1, 223 91
737, 110	201, 866	70, 379	3, 535, 027	168, 363	18, 133 07	5.13	862 53	1, 995 57
318, 500	114, 868	19, 532	1, 778, 125	254, 018	5, 589 79	3.14	798 54	3, 841 39
336, 947	125, 290	32, 958	1, 929, 338	241, 167	6, 228 14	3.23	778 52	11, 327 98
751, 946	292, 017	111, 290	3, 620, 089	227, 256	12, 003 83	3.32	753 99	2, 562 70
1, 454, 579	230, 611	140, 279	6, 307, 043	286, 684	17, 263 42	2.74	784 70	
528, 823	186, 879	84, 983	2, 481, 347	334, 478	5, 225 27	2.11	746 47	



# REPORT OF THE POSTMASTER-GENERAL.

1061

system for the year ending June 30, 1879—Continued.

Collected.			Pieces handled.		Cost of service (including incidental expenses).			Postage on local matter.
Letters.	Postal cards.	Newspapers.	Aggregate.	Per carrier.	Aggregate.	Per piece.	Per carrier.	
7,790,887	2,140,405	2,056,046	32,196,695	279,971	\$95,056 14	Mills.	\$826 57	\$46,650 48
781,820	263,127	103,859	3,754,868	375,439	7,512 10	2.95	751 31	3,639 44
274,206	81,170	72,447	1,918,111	219,685	4,419 47	3.85	736 58	1,544 30
6,510,732	1,067,387	1,016,426	17,153,548	343,071	49,313 50	2.87	986 27	47,535 27
480,180	128,574	67,005	1,632,616	272,103	4,491 78	2.75	748 63	3,016 58
185,140	69,467	41,531	1,356,310	271,262	3,869 99	2.85	774 00	1,287 64
276,139	125,266	52,820	1,723,837	215,480	6,031 11	3.50	753 89	3,403 83
1,060,982	371,976	155,400	5,242,077	327,629	11,829 64	2.26	789 85	6,716 45
1,278,070	320,044	210,561	4,623,990	330,285	11,507 91	2.50	821 99	4,906 78
293,855	70,529	52,399	1,323,558	220,593	4,297 32	3.25	716 22	2,154 17
1,472,389	314,867	267,796	5,167,176	345,815	11,433 81	2.20	762 25	6,500 34
852,706	253,263	87,439	3,249,019	270,751	9,468 55	2.91	789 04	3,090 07
2,027,642	390,467	389,194	8,671,334	197,076	36,449 10	4.20	828 89	17,674 89
531,950	163,913	53,756	1,915,119	319,186	4,684 02	2.44	780 67	1,708 74
302,407	104,608	24,848	1,718,908	171,890	7,575 10	4.40	757 51	2,825 04
414,445	128,296	53,707	2,085,928	189,630	8,639 28	4.14	785 39	6,332 75
253,174,241	62,130,798	39,862,632	809,854,065	339,065	1,942,261 15	2.40	823 34	2,812,523 86
letter-carriers from July 1, 1878 .....					5,445 46			
.....					1,947,706 61			

Table showing the increase and decrease of post-offices in the several States and Territories; also the number of post-offices at which appointments are made by the President by the Postmaster-General, for the year ended June 30, 1879.

States and Territories.	Whole number of post-offices in the United States June 30, 1878.	Whole number of post-offices in the United States June 30, 1879.	Increase.	Decrease.	Number of postmasters appointed by the President June 30, 1878.	Number of postmasters appointed by the President June 30, 1879.	Increase.	Decrease.	Number of postmasters appointed by the Postmaster-General June 30, 1878.	Number of postmasters appointed by the Postmaster-General June 30, 1879.
Alabama.....	967	1,049	82	.....	17	22	5	.....	850	1,022
Alaska.....	2	2	.....	.....	.....	.....	.....	.....	2	2
Arizona.....	53	74	21	.....	2	3	1	.....	51	7
Arkansas.....	750	824	84	.....	8	8	.....	.....	743	82
California.....	814	836	22	.....	43	49	7	.....	772	78
Colorado.....	265	293	28	.....	12	16	4	.....	253	27
Connecticut.....	440	444	4	.....	45	49	4	.....	395	39
Dakota.....	206	279	73	.....	4	6	2	.....	202	27
Delaware.....	106	107	1	.....	4	6	2	.....	102	10
District of Columbia.....	6	6	.....	.....	1	1	.....	.....	5	.....
Florida.....	271	306	35	.....	7	7	.....	.....	264	29
Georgia.....	898	965	67	.....	21	23	2	.....	877	94
Idaho.....	92	92	.....	.....	2	3	1	.....	90	8
Illinois.....	1,938	1,957	19	.....	150	162	12	.....	1,788	1,78
Indiana.....	1,571	1,610	39	.....	67	72	5	.....	1,504	1,53
Indian Territory.....	62	70	8	.....	.....	.....	.....	.....	62	7
Iowa.....	1,456	1,467	11	.....	94	97	3	.....	1,363	1,37
Kansas.....	1,296	1,349	163	.....	33	46	13	.....	1,193	1,34
Kentucky.....	1,239	1,286	47	.....	27	28	1	.....	1,212	1,25
Louisiana.....	394	424	30	.....	9	10	1	.....	385	47
Maine.....	914	921	7	.....	26	31	5	.....	888	88
Maryland.....	640	664	24	.....	12	13	1	.....	628	65
Massachusetts.....	729	745	6	.....	103	108	5	.....	636	63
Michigan.....	1,293	1,325	33	.....	71	81	10	.....	1,221	1,24
Minnesota.....	905	958	53	.....	27	31	4	.....	878	92
Mississippi.....	621	692	41	.....	16	20	4	.....	605	64
Missouri.....	1,606	1,646	40	.....	42	49	7	.....	1,554	1,56
Montana.....	116	123	7	.....	6	6	.....	.....	110	11
Nebraska.....	630	692	53	.....	17	23	6	.....	622	66
Nevada.....	97	115	18	.....	10	11	1	.....	87	10
New Hampshire.....	449	477	4	.....	25	24	.....	1	424	42
New Jersey.....	674	678	4	.....	50	53	3	.....	634	62
New Mexico.....	96	102	6	.....	1	1	.....	.....	95	10
New York.....	2,869	2,920	51	.....	174	186	12	.....	2,693	2,73
North Carolina.....	1,300	1,365	65	.....	11	13	2	.....	1,289	1,35
Ohio.....	2,259	2,313	54	.....	108	110	2	.....	2,151	2,20
Oregon.....	329	354	25	.....	7	7	.....	.....	322	34
Pennsylvania.....	3,290	3,333	43	.....	125	130	5	.....	3,165	3,20
Rhode Island.....	109	110	1	.....	11	11	.....	.....	98	9
South Carolina.....	543	566	23	.....	11	13	2	.....	532	55
Tennessee.....	1,238	1,316	78	.....	17	16	.....	1	1,224	1,30
Texas.....	1,131	1,218	87	.....	37	40	3	.....	1,094	1,17
Utah.....	190	198	8	.....	3	4	1	.....	187	19
Vermont.....	493	494	1	.....	19	21	2	.....	474	47
Virginia.....	1,600	1,661	61	.....	25	25	.....	.....	1,575	1,63
Washington.....	171	200	29	.....	3	3	.....	.....	168	19
West Virginia.....	831	843	12	.....	7	8	1	.....	824	83
Wisconsin.....	1,303	1,327	24	.....	56	62	4	.....	1,245	1,26
Wyoming.....	55	60	5	.....	3	3	.....	.....	52	5
Total.....	39,258	40,855	1,597	.....	1,570	1,711	143	2	37,679	39,14



## REPORT OF THE SECOND ASSISTANT POSTMASTER-GENERAL.

POST-OFFICE DEPARTMENT,  
OFFICE OF THE SECOND ASSISTANT POSTMASTER-GENERAL,  
Washington, D. C., November 1, 1879.

SIR: At the close of the last fiscal year, June 30, 1879, the

### ANNUAL COST OF INLAND TRANSPORTATION

was as follows, viz:

On 1,059 railroad routes, aggregating 79,991 miles in length.....	\$9,597,590
On 112 steamboat routes, aggregating 21,240 miles in length.....	754,388
On 9,225 other routes, designated as "star routes" aggregating 215,490 miles in length.....	6,401,830
Total cost.....	16,753,808

Compared with the state of the service at the close of the preceding year, the railroad routes show an increase of 59 routes in number, of 2,871 miles in aggregate length, and \$995 in annual cost. This small increase in cost is owing to the reduction in the rate of pay under act of June 17, 1878.

The steamboat routes show an increase in number of 6 routes, of 3,171 miles in aggregate length, whilst the increase in the annual cost is only \$1,095. This is owing, principally, to the mails being carried gratuitously on the route from Fernandina, Fla., to Brunswick, Ga., a distance of 40 miles, and from New Orleans, La., to Havana, Cuba, a distance of 832 miles.

The "star routes" show an increase of 414 in number, of 8,703 miles in aggregate length, and of \$686,887 in annual cost. Taken together, the increase in the number of routes was 479; in aggregate length, 14,745 miles; and in the annual cost \$689,787.

### CONTRACTS.

Number of contracts drawn during the year ended June 30, 1879.....	8,000
Number of official and certified copies made during same period.....	200
Number redrawn on account of failures of contractors during same period.....	1,000
Total .....	9,200

### RAILROAD SERVICE—ESTIMATE FOR 1881.

The cost of the transportation of mails by railroad for the fiscal year ended June 30, 1879, was at the rate of \$9,692,590.

The cost for the fiscal year ended June 30, 1878, was at the rate of \$9,566,595, the difference showing an increase for 1879 over 1878 of \$125,995. This increase, however, does not represent the actual rate of increase in the service, as account must be taken of the reduction of 5 per cent. in the rate of compensation from July 1, 1878, made under act of June 17, 1878. The amount of this deduction is, in round numbers, \$400,000, making, with the \$125,995, an increase of \$525,995 for 1879 over 1878, being a little less than 5.5 per cent.

In the explanation, in the last annual report, of the estimates for the current fiscal year, allusion was made to the probable improvement of the business of the country, and its effect upon postal affairs.

It is gratifying to be able now to point to the general prosperity existing fact, and no longer an element of uncertainty.

Therefore, without argument as to the necessity of providing rate of increase for the transportation of mails by railroad for 1877, the actual increase for 1877, 1878, and 1879, the cost for that year down at \$10,000,000, which is an increase of a little over 11.11. The appropriation for railway post-office car service for 1880 is \$1,000,000 and the increase for this item is placed at the lower rate of 8 per cent because the system, as now in operation, covers the greater number of cases where the most pressing need exists for such service, including the establishment of the system in Southern States from July 1, 1878, that there remains at present no general system to be provided for the estimate for 1881. This item is therefore placed at \$1,350,000.

#### THE SPECIAL FUND FOR PROPER FACILITIES.

Upon the enforcement of the law requiring a reduction of 10 per cent in the compensation for carrying the mails on railroad routes from July 1, 1876, it was found that the companies rendering the most important postal service to the public, were disposed to lessen the accommodations already provided, and withhold the facilities necessary to a prompt and expeditious performance of the service.

To meet this, Congress, on the 3d March, 1877, appropriated \$1,000,000 to be used by the Postmaster-General to obtain proper facilities for the trunk lines. The compensation to railroads was further reduced 5 per cent. from July 1, 1878, and the same act continued the appropriation for proper facilities.

By the use of this fund the department has succeeded in preventing any injury to the postal service on the most important lines, and in all cases has secured the running of special trains of great value to the business interests of the sections interested. As the compensation to railroads remains at the rates prescribed by act of June 17, 1878, it is manifest, considering the present state of values, that it is necessary that a sufficient special fund be provided for the maintenance of proper facilities for the ensuing fiscal year.

#### DELIVERY OF MAILS BY RAILROAD COMPANIES FROM STATIONS TO POST-OFFICES.

In the report for 1878 the questions of compensation for service on short routes and the delivery of mails from stations to post-offices are presented as proper subjects for the consideration of Congress, and hence is again made to these questions, because they stand in the way of an equitable adjustment of the compensation to railroad companies for carrying the mails.

#### PAY FOR CARRYING THE MAILS ON RAILROAD ROUTES.

The act of March 3, 1879, provides, "That the Postmaster-General shall request all railroad companies transporting the mails to furnish under seal, such data relating to the operating, receipts, and expenses of such roads as may in his judgment be deemed necessary to enable him to ascertain the cost of mail transportation and the proper compensation to be paid for the same, and he shall in his annual

Congress make such recommendations, founded on the information obtained under this section, as shall in his opinion be just and equitable."

In compliance with this requirement, a letter was addressed to the railroad companies asking the following information:

*First.* The average number and length in feet and inches of the passenger-coaches, including sleeping-cars, run daily, except Sunday, in each direction over your lines.

*Second.* The (average) number and length, in feet and inches, of the cars or apartments used for baggage run over the road in each direction daily, except Sunday.

*Third.* The number and length, in feet and inches, of the cars or apartments used for express matter run over the road in each direction daily, except Sunday.

*Fourth.* The amount received for the transportation of passengers and the cost of running passenger-coaches.

*Fifth.* The cost of running cars or apartments for baggage.

*Sixth.* The amount received for the conveyance of express matter and the cost of running the cars or apartments devoted to the use of the same.

*Seventh.* The actual expenditure for the conveyance of mail between stations and post-offices where the latter are not over 80 rods distant from the former.

*Eighth.* Make separate statements of Sunday trains.

It will be noticed that the department, ignoring the questions of cost of construction, &c., has endeavored to ascertain the average amount of space used for the passenger business and the receipts and expenses attributable to the same, and thus to arrive at the rates of cost and profit per linear foot per mile run resulting from the passenger traffic, and with the view of submitting the same to Congress, as furnishing a just and equitable basis upon which to fix the rates of pay for the space used for mails and agents.

The companies have not generally replied, and such replies as have been received have not been arranged, because the pressure of current business has been so great as to prevent their consideration.

#### AUSTRALIAN MAILS.

For several years a heavy British mail, destined for Australia, has been included with the United States mails, and carried from New York across the continent to San Francisco; by the carrying of which the cost of the transportation of mails to this department has been increased at the rate of about one hundred thousand dollars per annum. And, while this sum has been included in the appropriations for railroad transportation, and appears to be an expenditure on account of our own mails, yet, through the competent representation of the interests of this country at the International Postal Congress, the exceptional character of the service rendered by this government in carrying the Australian mails as herein explained, has been recognized, and the British Government has already paid into the United States Treasury the actual cost of doing the work, which to this time amounts to something over a quarter of a million dollars.

And, while this service does not appear as a credit to the item of railroad transportation, it is such in fact.

## ADJUSTMENT OF RAILWAY PAY.

I again invite attention to the service performed by the division "Railway Adjustment" in fixing the rates of pay for carrying the mail on nearly 80,000 miles of railroad, amounting to \$10,000,000 per annum, and covering every State in the Union, and conducting the correspondence incident thereto. The clerk in charge of this work receives \$1,800 per annum, while, in my opinion, the salary attached to this position should be not less than \$2,000 per annum, as "Superintendent Railway Adjustment."

## THE CHIEF CLERK.

The chief clerk of the contract office occupies a position which requires a superior order of executive ability, and involves great responsibility, as he is in fact deputy assistant postmaster-general, and is frequently and necessarily charged with the entire conduct of the affairs of the contract office. The salary attached to the position for twenty years has been \$2,000 per annum, which is considerably less than is paid to the chiefs of divisions of this department. And I have recommended that this salary be increased to \$2,500 per annum, which is less than the salaries fixed for similar positions in the Treasury Department elsewhere.

## STAR SERVICE.

Upon the application and recommendation of members of Congress, Army and other public officers, and State officers and citizens interested, the star service has been largely increased during the past year. This action is justified by the large increase in the volume of mail matter carried in consequence of the increased facilities for transportation and the enlargement of the matter recently declared to be mailable. The superior arrangements for its safety in transit.

## DEFECTS IN PRESENT LAWS.

I desire to call particular attention to the existing laws, which have been in force many years, under which orders for increased frequency and increased speed are necessarily made. The section relating to increase of service is as follows, viz: "Compensation for additional service in carrying the mail shall not be in excess of the exact proportion which the original compensation bears to the original service, and when such additional service is ordered the sum to be allowed therefor shall be expressed in the order and entered upon the books of the postmaster; and no compensation shall be paid for additional regular service rendered before the issuing of such order."

That relating to allowance for increased celerity is as follows: "No extra allowance shall be made for any increase of expedited service in carrying the mail unless thereby the employment of additional carriers and carriers is made necessary, and in such case the additional compensation shall bear no greater proportion to the additional service of carriers necessarily employed than the compensation in the original contract bears to the stock and carriers necessarily employed in its execution."

It is frequently the case in regions comparatively new that service is not required at the time of advertising more frequently than once twice a week, and after the contract is entered into and the service



put in operation population centers along the line of the route, and more frequent service becomes a necessity. Under such circumstances it is clear that the rate that was reasonable for once or twice a week service through a sparsely settled region becomes a very unreasonable basis upon which to increase the service when the circumstances under which it is to be performed are entirely changed. I would therefore recommend that section 3960 be amended by adding after the semicolon following the word department the words "and the Postmaster-General may in his discretion relet the service by advertising for proposals for thirty days in the newspapers at the termini of the route, or if there be none published at those points, then in others in circulation in the region to be supplied with the mails; the service to be awarded to the lowest responsible bidder, as usual."

Under section 3961 allowances for increased speed are based upon the sworn statements of contractors showing the additional stock and carriers required. This practically makes a man and a horse of equal value as factors in determining the rate of increased compensation to be allowed. I would, therefore, recommend that allowance for increased speed be based upon the proportion the cost of performing the original service bears to the cost of the service at the increased speed; and that such additional allowances shall in no case be greater than 50 per centum of the original cost of the service. In case the cost of increased speed would amount to more than 50 per centum of the cost of the original service, the Postmaster-General shall readvertise for service with the increased speed; or, in his discretion, he may advertise in any case where increased speed is necessary. The advertisement to be inserted for not less than thirty days in newspapers published at the termini of the route, or in those published elsewhere having circulation along the line of the route, the contract to be awarded to the lowest responsible bidder, as usual.

This will accomplish, with but little delay, the desired improvement in the service, and with, I think, great advantage to the government.

#### INCREASE IN STAR SERVICE.

The estimates for the next fiscal year are made with a view to provide for the continuance of the present efficient service, and to afford largely increased service in the States of Indiana, Ohio, Kentucky, Tennessee, North Carolina, South Carolina, Georgia, Florida, Mississippi, and Alabama, which has already been advertised to go into effect July 1, 1886, and which will improve the present mail facilities.

The reason for advertising for the improved service is that it can be obtained at much less cost by so doing.

#### DEFICIENCIES.

Despite my effort to keep the cost of each item of inland transportation within each respective appropriation, there is an overexpenditure in the item of star transportation for the year ended June 30, 1879, of about \$150,000, while there is a surplus in the appropriation for steamboat and railroad service amounting to about 250,000 dollars, so that the aggregate expenditures for transportation do not exceed the amount appropriated for "Inland mail transportation."

## FAST MAIL TO HAVANA.

For several years there has been a growing demand, especially in commercial circles, for a fast-mail service to Havana, via Cedar Key West, and for improved mail connection with Mexican and American ports, and last year an earnest effort was made to put a service into operation to Havana.

The effort failed, however, in consequence of the inadequate compensation allowable for the proposed service under existing laws.

The enactment of a law authorizing the Postmaster-General to put a service between such ports of the countries mentioned above, in his judgment, be calculated to advance the interests of the United States, at a sufficient rate of pay per mile per annum to enable the department to put the desired service into operation.

## MAIL-BAGS, MAIL-CATCHERS, ETC.

To supply the current wants of the mail-service during the year ended 30th June last, 5,708 drafts on the various mail-tories, 530,559 mail-bags, of which 88,194 were locked and 442,365 were canvas mail-sacks; being, altogether, 42,080 more than the number distributed during the previous year. There were also distributed by drafts 301 mail-catchers. There were issued out of this division, with instructions, 41,603 mail-locks, 3,861 mail-safety key-chains, 5,343 mail-bag label-cases, 2,002 brass register tags, and 12,000 mail-bag label-hooks.

It will be seen, by reference to the accompanying table (C) for the appendix to the Postmaster-General's annual report, that the number of new mail-bags purchased under contracts and put into service during the year was 104,021, of which 14,021 were locked and 90,000 were canvas mail-sacks for use in the mails, and 10,000 for miscellaneous mail-matter; being, altogether, an increase, compared with the previous year, of 24,123 mail-bags; that the number of mail-bags in use was 300; and that the total expense of mail-bags and mail-catchers, including repairs, &c., was \$170,266.26. The average annual cost for the last three preceding years was \$171,588.10.

The total number of mail-bags repaired during the year was 1,000 and the total cost of their repairs was \$37,613.10. Prior to the present system of repairing mail-bags, the same repairs would have cost \$80,338.29; showing a saving of \$42,725.19 during the year ended 30th June last. The present improved system of having such work done. In the last year, since the old system was abolished, the present system of repairing mail-bags effected a total saving of \$192,282.06.

The total expense of mail-locks and keys during the year ended 30th June last, 1879, was \$12,780.55; the average annual cost for the last three preceding years having been \$12,021.66.

The accompanying table (H), prepared for the appendix to the Postmaster-General's annual report, exhibits an abstract of all the operations during the year ended 30th June last for mail-catchers, mail-bag label-cases, and mail-bag tags.

The term of all contracts for mail-locks and keys expired on 30th June last, 1879. Supplies of such have since been kept up to the present by repairs and small purchases, made provisionally from the funds of the department, as shown in detail by the table (G), before referred to.

The greater portion of the mail-locks now in use are nearly

and are becoming insecure from their long subjection to the peculiarly hard usage of the mail-service. They were procured under contracts made in 1870, and will have soon fulfilled their allotted term of usefulness; ten years' service, as experience has hitherto shown, being the limit of duration for mail-locks, beyond which their further use is not reliable for requisite security. In the present state of the arts, it is probable locks of a new kind and different construction from the present mail-locks may be made to last longer, but it is not a property of the locks constructed and made up to the date when these were contracted for. Besides, the mail-locks and keys used on the general and the through mails, and above referred to as having been long in use, the particular kind of locks and keys now used to secure, in transit, the through-registered mails (now the chief medium of transmitting valuable mail-matter between large cities), though not so long in service as the other mail-locks, are now no longer adapted to the present enlarged and growing system of through-registered mails, which demands a new, different, and peculiar kind of locks, affording better security and greater facilities for dispatching mails of that highly important character.

It would be neither expedient nor practicable to replace the old locks now in service, to the extent which will soon be requisite, with new locks of the same kind or pattern; nor would it be practicable, without detriment to the service, to displace the old kinds of mail-locks and keys by small supplies of new kinds, introduced gradually. Consequently, it is expedient that a precedent supply of new kinds of locks and keys, equal in quantity to those in use, be contracted for, manufactured, and be in readiness for distribution, in order to substitute properly one kind for another.

The substitution for the present mail locks and keys of new locks and keys of entirely different construction, and unlike any others hitherto used or known in any way to impair their utility as mail locks and keys, is, in my judgment, a necessity of the service, to be provided for without any delay beyond the ensuing session of Congress. For, if during that session authority of law be given by the requisite appropriations for new kinds of mail locks and keys, probably no contract for them could be made to take effect until July 1, 1880, and one year or perhaps eighteen months therefrom would be required to manufacture, deliver, inspect, and have ready for distribution to all the postmasters in the United States; and adding thereto the time which must necessarily be consumed in distribution and substitution, the old locks and keys could not be superseded until some time in 1882 or 1883. And it is believed the old locks will not be reliable for the safety of the mails beyond that time.

#### FINES AND DEDUCTIONS.

The amount of fines imposed upon contractors and deductions made from their pay, for failures and other delinquencies for the fiscal year ended June 30, 1879, was \$177,098.57, and the amount remitted for the same period was \$16,571.76, leaving the net amount of fines and deductions \$160,526.81.

I have the honor to be, very respectfully, your obedient servant,

THOS. J. BRADY,

*Second Assistant Postmaster-General.*

Hon. DAVID M. KEY,  
*Postmaster-General.*

*Cost of inland transportation and the items ancillary thereto for the years 1878 and 1879, with the appropriation for 1880 and the estimates of the amounts necessary to be appropriated for 1881; showing the percentage of increase and decrease, with the cost, appropriation, and estimate for mail locks and keys, mail-bags, and mail-bag catchers.*

Object.	Cost for 1878.	Cost for 1879.	Percentage increase or decrease of 1879 as to 1878.		Appropriation for 1880.		Percentage increase or decrease of 1880 as to cost of 1879.		Estimate for 1881.	Percentage increase or decrease as to appropriation for 1880.	
			Increase.	Decrease.			Increase.	Decrease.		Increase.	Decrease.
Inland transportation, railroad routes	89,506,535 00	89,567,580 00	0.00		89,000,000 00				\$10,000,000 00	11.11	
Railway post-office car-service					1,250,000 00				1,350,000 00	8.00	
For proper facilities on trunk lines	752,453 00	125,000 00			1,250,000 00				1,400,000 00	100.67	
Inland transportation, steamboat routes	5,714,943 00	6,401,830 00	12.05		5,900,000 00				7,375,000 00	25.00	
Railway transportation, "star" routes	1,290,600 00	1,272,200 00			1,350,000 00				1,450,000 00	7.40	
Railway post-office clerks	1,045,060 00	1,072,420 00	2.52		1,125,000 00				1,225,000 00	8.88	
Route-agents	162,050 00	167,640 00	3.43		175,000 00				200,000 00	14.28	
Mail-route messengers	105,530 00	112,531 00	6.63		120,000 00				150,000 00	25.00	
Local agents	639,497 00	664,174 00	3.77		675,000 00				725,000 00	7.40	
Mail messengers	13,475 00	12,780 55			15,000 00				150,000 00	900.00	
Mail locks and keys					15,000 00				200,000 00	8.30	
Mail-bags and mail-bag catchers	105,041 29	170,200 26	2.79		185,000 00				24,125,000 00	15.73	
Total					20,845,000 00						

NOTE.—The above estimates are based upon the contract prices and annual salaries, without reference to fines and deductions. This will explain the apparent discrepancy between this table and the Auditor's statement.

THOS. J. BRADY,  
Second Assistant Postmaster-General.



POST-OFFICE DEPARTMENT,  
OFFICE OF THE SECOND ASSISTANT POSTMASTER-GENERAL,  
*Washington, D. C., November 1, 1879.*

SIR: For a statement of the mail-service for the contract year ended June 30, 1879, &c., I have the honor to refer you to the tables hereto annexed.

Table A exhibits the character of the service, the length of routes, the number of miles of transportation, and the cost thereof, at the close of the year.

Table B exhibits the railroad service as in operation on the 30th of June, 1879; also the cost per mile per annum in each State and Territory.

Table C exhibits the steamboat service, as in operation on the 30th of June, 1879.

Table D shows the increase and decrease of mail transportation, and cost in the several States and Territories, during the year ended June 30, 1879.

Table E shows the weight of the mails, the speed with which they are conveyed, the accommodations for mails and agents, the trips per week, and the rates of pay per mile per annum, on railroad routes in States in which the contract term expired June 30, 1879, and also in other States and Territories; the returns having been obtained with a view to the readjustment of pay in accordance with the act of March 3, 1873, and used also in accordance with the acts of July 12, 1876, and of June 17, 1878, in the case of readjustments taking effect on and after July 1, 1876. This table is accompanied with an alphabetical index of the titles of the companies carrying the mails.

Table F shows the readjustment of the rates of pay per mile on railroad routes in States and Territories in which the contract term expired June 30, 1879, and also in other States and on certain new routes; the adjustment of the rates based on returns of the weight of the mails, the speed with which they are conveyed, the accommodations for mails and agents, and the number of trips per week, in accordance with the act of March 3, 1873, and with the acts of July 12, 1876, and of June 17, 1878, in the case of readjustments taking effect on and after July 1, 1876. This table also is accompanied with an alphabetical index of the titles of the companies carrying the mails.

Table G is a statement of the number, description, and prices of mail-bags, mail-catchers, mail locks and keys purchased, and of the expense incurred on account thereof, during the fiscal year ended June 30, 1879.

Table H is a statement of all contracts in operation on the 30th of June, 1879, for mail-bags, mail-catchers, &c.

Table I is a list of railway post-office lines in the United States June 30, 1879, showing the increase and decrease in the service since June 30, 1878.

Table K is a consolidated statement, as given in tables K and L of my report of June 30, 1878, showing in detail the railway-mail service in operation on June 30, 1879.

Very respectfully, your obedient servant,

THOS. J. BRADY,  
*Second Assistant Postmaster-General.*

Hon. DAVID M. KEY,  
*Postmaster-General.*

A.—Table of mail-service for the year ended June 30, 1879, as exhibited by the state of the year authorized by the Postmaster-General.

[The entire service and pay on each route are set down to the State under which the route is numbered, though extending sometimes into other States, instead of being divided among the States in which the different portions lie.]

States and Territories.	Length of routes.	Annual transportation and cost.						Total annual trans- portation by celer- ity, certainty, and security.	Total annual trans- portation by steam- boat.	Total annual trans- portation by rail- road.	Miles.	Total annual trans- portation.	Dollars.
		By steamboat.			By railroad.								
		Miles.	Dollars.	Celerity, certainty, and security.	Miles.	Dollars.	Celerity, certainty, and security.						
Maine.....	5,269	3,367	87,130	789	2,639	1,113	132,330	1,748,367	100,564	1,224,698	3,082,629	222,149	
New Hampshire.....	1,967	1,202	34,281	65	2,650	1,669	66,106	599,664	13,130	906,297	1,510,091	103,037	
Vermont.....	2,368	1,540	48,992	65	2,650	838	45,689	838,266	.....	1,076,457	1,914,723	144,661	
Massachusetts.....	3,114	1,218	63,194	30	7,875	1,866	261,967	894,410	28,080	3,787,392	4,709,882	336,036	
Rhode Island.....	554	1,218	7,273	198	16,000	1,177	20,435	110,931	143,457	396,508	650,896	43,708	
Connecticut.....	1,845	775	99,996	.....	.....	1,070	176,189	465,316	.....	2,283,939	2,749,255	206,185	
New York.....	12,450	6,196	237,155	142	7,371	6,112	1,207,475	3,237,092	75,509	11,114,096	14,428,697	1,432,001	
New Jersey.....	2,296	956	29,082	.....	.....	1,440	195,153	454,610	.....	2,536,672	2,991,282	294,235	
Pennsylvania.....	11,291	9,144	238,612	88	5,500	5,062	613,520	3,911,668	55,224	7,524,109	11,521,091	837,632	
Delaware.....	465	1,188	5,548	.....	.....	5,277	19,413	91,371	.....	258,454	349,825	24,901	
Maryland.....	3,663	1,827	50,493	656	12,550	1,180	241,677	1,052,057	192,349	2,309,766	3,554,172	313,720	
West Virginia.....	5,422	4,909	135,890	245	13,800	1,278	341,644	1,232,981	125,882	337,399	1,716,272	109,281	
Virginia.....	11,351	8,484	133,142	1,054	38,840	1,813	272,535	2,694,164	302,102	2,087,673	5,113,939	404,517	
North Carolina.....	11,141	9,381	111,286	351	10,003	1,669	103,967	1,972,274	98,800	1,255,327	3,326,403	225,256	
South Carolina.....	4,284	3,013	33,533	50	1,281	1,221	88,126	517,296	9,947	1,189,360	1,716,693	128,940	
Georgia.....	8,064	5,448	79,931	155	3,600	2,461	169,092	1,377,122	32,240	2,302,757	3,492,119	233,453	
Florida.....	7,686	7,783	40,381	4,456	93,276	2,467	20,069	477,198	733,222	411,954	1,612,374	153,666	
Alabama.....	10,126	7,353	113,646	601	13,712	2,069	147,658	1,585,457	133,648	2,076,579	3,795,984	275,046	
Mississippi.....	6,649	4,935	86,145	522	8,576	1,192	47,170	1,069,723	85,280	896,627	2,041,630	181,891	
Louisiana.....	6,236	3,707	101,785	1,785	102,036	1,524	44,748	848,469	517,608	478,633	1,844,710	248,569	
Texas.....	18,272	13,451	638,039	690	49,200	2,131	194,793	5,135,612	127,620	1,635,941	6,897,173	882,032	
Arkansas.....	10,549	7,548	171,431	2,318	125,658	4,483	30,478	3,125,806	344,960	3,919,959	7,980,065	326,067	
Missouri.....	15,208	10,426	212,075	575	26,250	4,297	530,579	2,904,237	179,400	3,919,959	7,064,658	783,904	
Illinois.....	8,325	6,776	92,012	372	9,106	1,177	125,775	1,543,215	87,611	1,453,127	3,034,356	226,893	
Tennessee.....	9,077	6,590	101,597	1,095	48,800	1,473	164,969	1,723,983	436,392	1,575,899	3,736,474	315,356	
Kentucky.....	12,732	6,379	147,938	216	17,500	6,157	1,073,083	2,388,583	160,670	8,601,161	11,216,414	1,238,541	
Ohio.....	7,873	4,581	83,252	.....	.....	3,296	340,874	1,301,265	.....	3,902,719	5,203,984	424,126	
Indiana.....	12,131	4,868	129,749	.....	.....	7,263	853,670	1,069,034	.....	7,640,058	9,339,092	983,419	

Kansas.....	13,734	9,890	109,069	.....	2,835	238,087	3,000,720	.....	2,247,711	5,317,431	428,054
Nevada.....	2,573	2,432	182,822	.....	143	9,599	1,014,896	.....	89,214	1,104,230	102,431
California.....	11,032	7,458	436,853	.....	2,737	431,069	2,859,873	.....	1,030,103	5,120,898	912,332
Oregon.....	4,867	3,865	160,577	.....	274	221,044	1,067,563	.....	1,170,907	1,374,592	294,068
Colorado.....	4,670	3,907	201,055	.....	763	50,410	1,527,770	.....	563,871	2,031,641	341,465
Washington Territory.....	2,800	1,185	27,316	.....	172	10,147	867,144	.....	107,278	823,208	102,732
Idaho Territory.....	2,457	2,457	134,042	.....	.....	.....	890,770	.....	.....	890,770	104,042
Montana Territory.....	2,828	2,828	138,327	.....	62	4,221	923,856	.....	.....	923,856	130,327
Dakota Territory.....	3,893	3,890	168,173	.....	.....	.....	1,823,143	.....	38,567	1,240,632	172,394
Wyoming Territory.....	1,406	1,406	134,328	.....	.....	.....	623,037	.....	.....	623,037	124,328
Utah Territory.....	2,703	2,492	224,019	.....	273	21,110	1,283,445	.....	178,745	1,402,190	245,132
Indian Territory.....	2,590	2,590	140,451	.....	.....	.....	880,008	.....	.....	880,008	140,451
New Mexico Territory.....	2,034	2,034	223,529	.....	.....	.....	837,871	.....	.....	837,871	223,529
Arizona Territory.....	2,302	2,302	190,407	.....	.....	.....	770,843	.....	.....	770,843	190,407
Total.....	310,711	215,480	6,401,830	21,240	79,991	9,507,500	60,248,339	5,091,474	93,092,992	107,432,803	10,722,808
Railway post-office clerks.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1,272,200
Route agents.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1,072,420
Mail-route messengers.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	167,640
Local agents.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	113,531
Mail-messengers.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	684,174
Aggregate.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	20,012,872

THOS. J. BRADY,  
Second Assistant Postmaster-General.

REPORT OF THE SUPERINTENDENT OF RAILWAY  
SERVICE.

POST-OFFICE DEPARTMENT,  
OFFICE GENERAL SUPERINTENDENT  
RAILWAY MAIL SERVICE  
Washington, D. C., November 1

SIR: The appropriation for

## RAILWAY POST-OFFICE CLERKS

for the fiscal year ending June 30, 1880, is \$1,350,000.

From the tables accompanying these estimates the increase in the force and expenditures for the various years will be seen, as also the large increase in the mails now passing over the various roads, and the large increase in the proportion of the same handled by the postal cars.

The registration of third-class mail has largely increased the force of the postal cars, and, in my opinion, there should be placed on each great through post-office line clerks whose only duty should be to receive, receipt for, and take sole charge of the registered mail. The volume of mail-matter is growing rapidly and it is an important part of the postal service. The value and importance of this mail demand that on the great lines one clerk should be assigned to its care and safety. It is so much to require a clerk to do full distribution, then impose on him the further duty of taking the charge and responsibility of the registered mail, where he must receipt for each package, enter it in his receipt book, and obtain in turn a receipt for it; this is no small amount of labor to say nothing of the great responsibility.

I desire to call attention to the fact that the railway post-office route-agents from Danville, Va., to New Orleans, La. (double daily); Peoria, Ill., to Savannah, Ga. (double daily); Savannah, Ga., to Jacksonville, Fla. (single daily); Kansas City, Mo., to Pueblo, Colo. (single daily); Saint Louis, Mo., to Texarkana, Texas (single daily); and the route-agents at St. Louis, Mo. (single daily), are only provided for on the named lines. So long as the four classes of employes are retained, the appropriation should be made so that it will not be necessary to employ route-agents exclusively to railway post-office work.

When the estimates for the present fiscal year were made, the route-agents on the named lines, excepting the Saint Louis and Texarkana railway post-office, were not in operation, consequently no provision was made in the last appropriation for this additional service, yet it was thought desirable to establish the service at that time on the best footing possible, bringing the matter to the attention of Congress.

Railway post-office clerks were not appointed on these lines until the route-agents that were on the lines at the time of the establishment of the railway post-office service were retained as such, and a provision was made; at the same time there is still a lack of force to perform the necessary requirements of the service.

I desire also to call attention to the fact that there have been no promotions made during the past fiscal year, nor can there be in the present appropriation for this fiscal year. There are a great many very worthy, competent, and deserving men that should be promoted.



and I would therefore, in view of these facts, respectfully recommend that you ask for an appropriation of \$1,450,000 for the fiscal year ending June 30, 1881.

#### ROUTE-AGENTS.

The appropriation for route-agents for the fiscal year ending June 30, 1880, is \$1,125,000. Section 4024 of the Revised Statutes provides that the Postmaster-General may employ route-agents at a salary of not less than nine hundred nor more than twelve hundred dollars per annum. Heretofore the pay of these agents has been graded according to the average number of miles run daily, but during the past year it became an absolute necessity to reduce nearly all of them to the minimum under the law, to prevent there being a deficiency in the appropriation. This reduction was a great injustice to the route-agents, many of whom are assigned to duty on railway post-office lines to perform the way or local work, and quite a number actually perform or make the same distribution as railway post-office clerks. It was also great injustice to the agents that run on the larger route-agent lines, where there is a large amount of work to perform. These agents are required to, and cheerfully perform their work in such a manner that all way and through connections are made, thus giving the mail practically the same rapidity in transit as a passenger could attain.

There is a growing need and a pressing demand for double daily route-agent service on the more important lines of that class. Having given this matter mature consideration, I have to respectfully recommend that you ask for an appropriation of \$1,225,000 for the fiscal year ending June 30, 1881.

#### MAIL-ROUTE MESSENGERS.

The appropriation for mail-route messengers for the present fiscal year is \$175,000. This amount is not sufficient to meet the demands of the service. Railroads are being built in all parts of the country, and the mileage is increasing more rapidly than was anticipated, and in view of the increasing prosperity of the country will doubtless continue to gain in a much larger ratio in the immediate future.

Where there is a railroad in operation the public very properly demand that it shall have the benefits of an agent upon it, if not more than thirty or forty miles in length. Railroad service without an agent is not as good for the general public on its line as star service. The first agents appointed on a new road are almost invariably mail-route messengers, which increases the demands on this appropriation. It is respectfully recommended that you ask for an appropriation of \$200,000 for the fiscal year ending June 30, 1881.

#### LOCAL MAIL-AGENTS.

The appropriation for local mail-agents for the present fiscal year is \$120,000. There is great need for an increase in this appropriation. These agents are now required to receipt for and transfer registered mail in addition to their other duties, which greatly increases their work, and requires them to assume a heavy responsibility, for which a large percentage of them do not receive an adequate remuneration for the labor performed. There are many railroad junctions which the good of the service demands should be provided with local agents.

There is no branch of the service more important than this, yet its merits have in a measure been overlooked. It neutralizes the good effects of close distribution if the transfers are not made at railroad

junctions promptly and with dispatch, and there is no certain this will be done unless there is some one to attend to it who responsible to the department. If the transfer is intrusted to the employés it very frequently happens that the connection is missed being to them a secondary consideration, and for the performance which they think they receive no pecuniary compensation.

I have carefully examined the requirements of this service and respectfully recommend that you ask for an appropriation of \$150,000 for the fiscal year ending June 30, 1881.

#### SALARIES OF EMPLOYÉS OF THE RAILWAY MAIL SERVICE

I desire to call attention to my predecessor's last annual report on this subject. Experience has taught me that his recommendation was a good one, and I fully indorse and earnestly recommend its adoption.

"In my last annual report I called attention to the present salaries of the employés of this service.

"If this salary represented the net amount received by these employés it might then be considered fair; but it does not; for out of the net they come their expenses when absent from home attending to their duties. In this expense there is no uniformity. His absence and consequently his expense depend on the importance of the route, the length of the run, the schedule, &c. The more important and heavier the route, the work, the longer time the employé has to absent himself, and the more opportunity he has to take advantage of any little circumstance which would inure to his pecuniary benefit. The more he has the interest in the service at heart, the greater the sacrifice he is called upon to make for its benefit.

"In fact, the success and growth of this service and the efficiency which has attained have been secured almost entirely by the efforts of those holding subordinate positions, who have, with comparatively small salaries, devoted their time and energies to it, changing from one position to another as their services were demanded, filling in where the necessities of the service required regardless of the sacrifices they were called on to make, and which could not be compensated for except by an occasional promotion as it has been possible to make. While some have received their hard-earned and merited promotion, there are still many who cannot, under the present organization, have their services properly recognized.

"In the present organization, one general superintendent, two assistant superintendents, and nine division superintendents are expected to keep the system in perfect running order on 95,000 miles of railroad and 10,000 boat routes, over which there is performed nearly 100,000,000 miles of annual service, superintend and regulate the workings of 2,605 express trains on these routes, regulate and correct the distribution at all points. How this has been done can best be judged from the report of the superintendent of distributed and errors made.

"In this connection, it should be remembered that at least twice a year there is a general change in the railroad schedules, and many other important ones each month, all of which must be anticipated, and the effect of each on the forwarding of the mails provided for.

#### "CHIEF HEAD CLERKS.

"After all these changes in distribution and other information has been tabulated and put in convenient form for reference by the employés

the line, it has been necessary to detail employes to examine the clerks, to see that they keep informed of all these changes, and that the duty assigned to them is properly performed; in other words, to superintend the work on each particular route or group of routes. To do this, it is necessary that he travel constantly, and for this the utmost that can be paid is \$1,400 per annum, out of which all his traveling-expenses must come. It does seem that to provide for this, a grade of officers, to be styled chief head clerks, should be established, with pay not to exceed \$1,400 per annum and actual traveling-expenses not exceeding \$3 per day.

“CLASSIFICATION.

“The question of a change in the classification was discussed last year. Now that the service is brought under one general management, and each employe is required to work under the same general instructions and schemes, the only distinction in fact being the quantity of work, it seems that distinctions obsolete in practice should be abandoned. The clerks could be more uniformly graded, avoiding the dissatisfaction that now arises from the distinction in designation and pay where there is none in the work. It would, therefore, be better for the service, and prove more economical, should the appropriation be made in gross for these five classes, designating them as postal clerks, and allowing, say, five classes,” whose salaries shall not exceed the following rates per annum: First class, \$800; second class, \$900; third class, \$1,000; fourth class, \$1,200, and fifth class, \$1,400. If this recommendation is adopted the first, second, and third classes would be employed on the lighter and shorter lines. The fourth and fifth classes where railway post-office cars are required. The reclassification and making the appropriation in gross will in no way increase the expenditure. In the event of the adoption by Congress of this classification, the appropriation for railway postal clerks should be \$3,025,000.

The accompanying Tables A and B are an exhibit of the increase and decrease of this branch of the postal service.

TABLE A.—Statement for the years 1870 to 1879, inclusive, showing the number of railway post-office clerks, route-agents, mail-route messengers, and local agents employed, amount of annual compensation to each class, and the percentage of increase and decrease in number and annual compensation.

Year.	Number of railway post-office clerks in service at end of each fiscal year.	Increase in railway post-office clerks.	Increase, per cent.	Annual compensation.	Increase of annual compensation.	Decrease of annual compensation.	Increase per cent. of annual compensation.	Decrease per cent. of annual compensation.	Number of route-agents in service at end of each fiscal year.	Increase in route-agents.	Decrease in route-agents.	Increase, per cent.	Decrease, per cent.	Annual compensation.	Increase of annual compensation.	Decrease of annual compensation.	Increase per cent. in annual compensation.	Decrease per cent. in annual compensation.	Number of mail-route messengers in service at end of each fiscal year.	Increase of mail-route messengers in service at end of each fiscal year.
1870..	375	138	36.8	\$442,000 00	\$68,800 00	\$106,800 00	46.72	26.53	587	97	16.52	16.52	10.83	\$574,000 00	\$66,680 00	\$96,680 00	10.83	16.52	78	103
1871..	513	139	27.1	649,400 00	172,200 00	172,200 00	26.53	26.53	634	64	11.69	11.69	9.91	671,250 00	66,540 00	66,540 00	9.91	10.83	140	140
1872..	642	129	20.1	821,600 00	191,400 00	179,400 00	23.36	23.36	704	80	12.83	12.83	12.35	737,820 00	90,420 00	90,420 00	12.35	12.35	171	171
1873..	752	110	14.6	941,000 00	191,400 00	191,400 00	20.45	20.45	802	80	12.83	12.83	8.58	828,240 00	86,440 00	86,440 00	8.58	12.35	211	211
1874..	850	98	11.5	1,058,200 00	117,200 00	117,200 00	11.06	11.06	873	74	8.45	8.45	5.45	890,680 00	86,440 00	86,440 00	5.45	8.58	211	211
1875..	901	51	6.0	1,163,600 00	105,400 00	105,400 00	9.06	9.06	867	51	5.85	5.85	5.45	890,680 00	86,440 00	86,440 00	5.45	8.58	225	225
1876..	1,041	141	13.5	1,223,750 00	160,150 00	160,150 00	13.06	13.06	1,017	30	2.95	2.95	4.72	940,151 97	43,701 45	43,701 45	4.72	5.45	219	219
1877..	1,051	9	0.85	1,223,563 41	14,723 30	14,723 30	1.20	1.20	1,065	48	4.52	4.52	7.32	959,680 86	10,508 89	10,508 89	2.07	4.88	248	248
1878..	1,081	30	2.85	1,238,292 71	143,101 43	143,101 43	8.32	8.32	1,143	78	7.32	7.32	00.87	993,811 51	34,150 65	34,150 65	3.35	2.07	241	241
1879..	1,091	10	0.92	1,341,394 14	103,101 43	103,101 43	8.32	8.32	1,133	78	00.87	00.87	00.87	1,035,891 01	42,050 40	42,050 40	4.23	4.23	247	247

Year.	Increase in mail-route messengers.	Decrease in mail-route messengers.	Increase, per cent.	Decrease, per cent.	Annual compensation.	Increase of annual compensation.	Decrease of annual compensation.	Increase per cent. of annual compensation.	Decrease per cent. of annual compensation.	Number of local mail-agents in service at end of each fiscal year.	Increase in local mail-agents.	Decrease in local mail-agents.	Increase, per cent.	Decrease, per cent.	Annual compensation.	Increase of annual compensation.	Decrease of annual compensation.	Increase per cent. of annual compensation.	Decrease per cent. of annual compensation.
1870..	25	43	32.05	41.75	\$46,710 00	\$16,200 00	\$28,000 00	35.44	45.26	60	16	24.24	24.24	24.24	\$40,230 00	\$12,300 00	\$10,780 00	30.30	18.40
1871..	43	43	32.05	41.75	61,910 00	16,200 00	28,000 00	26.34	45.26	82	16	24.24	24.24	24.24	58,430 00	\$12,300 00	\$10,780 00	30.30	18.40
1872..	43	43	32.05	41.75	89,910 00	16,200 00	28,000 00	26.34	45.26	82	16	24.24	24.24	24.24	69,216 00	\$12,300 00	\$10,780 00	30.30	18.40



TABLE B.—Statement for the years 1870 to 1879 inclusive of steamboat and railroad routes, miles of annual service on the same, also miles of railway post-office service and miles of annual service thereon, together with the increase and decrease per cent.

Year.	Miles of steamboat route.	Increase of miles of steamboat routes.	Decrease of miles of steamboat routes.	Increase, per cent.	Decrease, per cent.	Miles of annual service on steamboat routes.	Increase in miles of annual service on steamboat routes.	Decrease in miles of annual service on steamboat routes.	Increase, per cent.	Decrease, per cent.	Miles of railroad service.	Increase of miles of railroad service.	Decrease of miles of railroad service.	Increase, per cent.	Decrease, per cent.	Miles of annual service on railroad routes.	Increase in miles of annual service on railroad routes.	Decrease in miles of annual service on railroad routes.	Increase, per cent.	Decrease, per cent.
1870	20,695	2,802	261	13.64	1.74	4,122,385	562,393	376,642	13.64	1.74	43,727	9,107	6,034	20.86	12.96	47,551,970	8,005,078	2,065,078	16.53	10.83
1871	20,334	2,802	1,474	13.64	7.25	4,084,778	572,911	376,642	13.64	16.21	49,834	9,107	6,034	18.21	12.48	55,557,048	6,824,701	2,065,078	12.48	12.48
1872	18,866	1,872	5,098	11.12	11.12	3,946,436	572,911	376,642	13.64	16.21	57,911	9,107	6,034	16.21	12.48	62,491,749	6,824,701	2,065,078	12.48	12.48
1873	16,634	1,872	1,872	11.17	15.27	3,947,785	572,911	376,642	13.64	16.21	63,497	9,107	6,034	16.21	12.48	65,021,445	6,824,701	2,065,078	12.48	12.48
1874	18,758	1,872	1,872	11.17	15.27	4,078,725	572,911	376,642	13.64	16.21	67,784	9,107	6,034	16.21	12.48	72,490,545	6,824,701	2,065,078	12.48	12.48
1875	15,885	1,872	1,872	11.17	15.27	3,958,852	572,911	376,642	13.64	16.21	70,083	9,107	6,034	16.21	12.48	75,154,910	6,824,701	2,065,078	12.48	12.48
1876	14,883	2,802	905	18.83	5.73	3,704,533	572,911	376,642	13.64	16.21	72,846	9,107	6,034	16.21	12.48	80,843,865	6,824,701	2,065,078	8.44	3.44
1877	17,685	2,802	387	2.18	18.80	4,038,228	572,911	376,642	13.64	16.21	72,846	9,107	6,034	16.21	12.48	85,358,710	6,824,701	2,065,078	9.80	3.44
1878	18,072	3,168	3,168	17.53	17.53	4,629,298	462,178	376,642	9.86	14.63	77,119	9,107	6,034	14.63	2.04	92,120,395	6,824,701	2,065,078	7.92	9.80
1879	21,240	3,168	3,168	17.53	17.53	5,061,474	462,178	376,642	9.86	14.63	79,991	9,107	6,034	14.63	2.04	93,092,992	6,824,701	2,065,078	1.06	1.06

Year.	Miles of route on which there is railway post-office service.	Increase of miles of railway post-office service.	Decrease of miles of railway post-office service.	Increase, per cent.	Decrease, per cent.	Miles of annual service by railway post-office.	Increase of miles of annual service by railway post-office.	Decrease of miles of annual service by railway post-office.	Increase, per cent.	Decrease, per cent.	Total miles of railroad and steamboat routes.	Increase of miles of railroad and steamboat routes.	Decrease of miles of railroad and steamboat routes.	Increase, per cent.	Decrease, per cent.	Miles of annual service on railroad and steamboat routes.	Increase in miles of annual service on railroad and steamboat routes.	Decrease in miles of annual service on railroad and steamboat routes.	Increase, per cent.	Decrease, per cent.
1870	8,253	2,956	...	35.82	...	6,500,000	3,572,540	...	54.96	...	64,423	5,746	...	8.92	...	51,674,355	8,567,471	...	16.58	...
1871	11,208	2,999	...	35.95	...	10,072,540	3,572,540	...	32.06	...	70,168	6,003	...	8.41	...	60,241,828	6,553,359	...	10.80	...
1872	14,117	2,999	...	5.30	...	12,298,850	3,572,540	...	3.66	...	76,771	6,003	...	4.49	...	68,800,185	6,553,359	...	4.14	...
1873	14,866	749	...	5.30	...	12,747,625	450,775	...	3.66	...	80,219	3,443	...	4.49	...	69,500,230	2,070,045	...	10.02	...
1874	16,414	1,548	...	10.41	...	14,267,665	1,500,010	...	12.28	...	88,268	6,149	...	7.06	...	76,538,270	6,970,040	...	8.80	...
1875	16,632	518	...	3.16	...	14,630,768	369,150	...	2.82	...	85,871	...	497	...	...	79,113,762	2,574,493	...	2.95	...
1876	17,713	781	...	4.61	...	15,200,915	570,139	...	3.80	...	87,221	1,860	...	1.58	...	83,445,705	2,331,043	...	9.76	...
1877	17,761	48	...	0.27	...	16,925,050	1,715,135	...	11.37	...	92,221	5,000	...	5.73	...	89,398,948	7,951,243	...	8.23	...
1878	16,980	781	...	4.30	...	17,833,910	1,008,860	...	5.86	...	95,191	2,960	...	3.21	...	94,740,083	7,832,745	...	1.48	...
1879	17,340	360	...	2.12	...	17,868,210	65,700	...	60.87	...	101,221	9,040	...	9.34	...	96,184,486	1,484,773	...	...	...

The increase in the miles of railroad routes in operation June over that in operation June 30, 1878, was 3.72 per cent.; the miles of annual service performed over the same was 1.06 per cent.; the increase in the total miles of railroad and steamboat routes was 1.48 per cent.; the increase in miles of annual service performed over the same was 2.12 per cent., while the annual service performed on the same was decreased 00.37 per cent. This decrease is more apparent as it arises from corrections in the length and frequency of routes.

#### EXTENSION OF POSTAL-CAR SERVICE IN THE SOUTH

During the past fiscal year the Washington, D. C., and Lynchburg, Va., railway post-office was extended to Danville, Va., and a daily line established, making double daily service between Washington, D. C., and Danville, Va. There was a pressing need for this service, and it has proved of great benefit to the public on that line. To make this line of more importance the second daily line was established between Lynchburg, Va., and Chattanooga, Tenn., which passes through a rich, populous section that demands and requires this increased service. Efforts have been made to secure such service, but thus far all our exertions have been unsuccessful, and we have hopes that in the near future such service may be secured.

There was one line of forty-foot postal cars running on the New York and Chicago Railway post-office, which were found inadequate for the service to be performed. These have been substituted with larger cars, which greatly facilitates the work of distribution to be performed between the two important commercial centers of New York and Chicago.

During the past fiscal year arrangements were made to establish single daily railway post-office service between Richmond, Va., and New Orleans, La., via Charlotte, Atlanta, Montgomery, and Mobile; double daily service between Petersburg, Va., and Savannah, Ga.; single daily service between Savannah, Ga., and Jacksonville, Fla.; and single daily service between Kansas City, Mo., and Pueblo, Colo. There was no appropriation made in the last appropriation to pay these employes, yet a special fund placed at the disposal of the Postmaster-General enabled him to procure this service, and it was thought best to secure it while it could be obtained. The special fund placed at the disposal of the Postmaster-General has proved to be of incalculable benefit to the service, and enabled him to continue harmonious relations with the railroad companies and secure the additional facilities with greatly improved schedules. It is hoped that Congress will make some provision so that this service and facilities may be continued.

#### MAIL DISTRIBUTED, ERRORS MADE, ETC.

Particular attention is called to the statement of error-slips distributed, &c., Tables C and D, attached hereto.

TABLE C.—Statement of mail distributed on the various railway post-office lines of the railway mail-service during the fiscal year ending June 30, 1879.

Division.	Number of letter packages distributed.	Whole number of letters distributed.	Number of sacks of paper-mail distributed.	Whole number of pieces of paper-mail distributed.	Whole number of letters and pieces of paper-mail distributed.	Number of packages, pouches, and cases of registered mail-matter.
First .....	2, 934, 159	146, 707, 950	369, 351	73, 870, 200	220, 578, 150	1, 815, 036
Second .....	4, 447, 438	222, 371, 900	664, 094	132, 638, 800	355, 310, 700	1, 607, 589
Third .....	1, 172, 060	58, 033, 000	103, 401	38, 092, 200	97, 325, 200	1, 034, 283
Fourth* .....	1, 213, 818	60, 690, 900	259, 649	51, 929, 800	112, 620, 700	1, 061, 172
Fifth .....	5, 348, 000	297, 400, 000	1, 035, 020	207, 124, 000	504, 524, 000	1, 844, 062
Sixth .....	8, 475, 047	423, 752, 350	1, 043, 663	208, 732, 600	632, 484, 950	1, 924, 274
Seventh .....	3, 691, 630	184, 581, 500	597, 310	119, 463, 200	304, 044, 700	1, 276, 033
Eighth .....	1, 016, 281	50, 814, 050	160, 387	82, 077, 400	82, 891, 450	807, 636
Ninth .....	4, 480, 602	224, 030, 100	574, 258	114, 851, 600	338, 881, 700	800, 685
Total .....	33, 379, 635	1, 668, 081, 750	4, 898, 399	970, 679, 800	2, 648, 661, 550	10, 395, 990

\* The decrease in mail distributed in the fourth division during the fiscal year is due to the yellow-fever epidemic during the summer and fall months of 1878.

TABLE D.—Statement of errors made by railway post-office clerks and route-agents in the several divisions of the railway mail-service during the fiscal year ending June 30, 1879.

Division.	Number of incorrect slips returned.	Number of errors on incorrect slips.	Missent.			Misdirected.			Number of errors checked against other employees.
			Number of packages.	Number of pouches.	Number of sacks.	Number of packages.	Number of pouches.	Number of sacks.	
First .....	14, 760	24, 554	953	71	39	21	15	11	28, 761
Second .....	33, 234	62, 210	876	38	66	110	2	20	124, 013
Third .....	13, 757	22, 862	289	4	10	31	2	10	47, 286
Fourth .....	16, 425	24, 599	463	57	80	117	24	17	85, 148
Fifth .....	115, 538	219, 723	1, 260	114	87	347	43	198	424, 129
Sixth .....	68, 847	145, 334	1, 553	133	90	829	46	136	355, 797
Seventh .....	68, 889	110, 014	1, 242	122	147	104	4	15	228, 214
Eighth .....	2, 882	3, 094	95	1	.....	84	2	.....	17, 871
Ninth .....	73, 323	149, 312	791	31	10	16	9	32	136, 146
	427, 655	763, 511	7, 024	571	494	1, 109	149	430	1, 447, 304

## RECAPITULATION.

Number of letters and pieces of paper-mail distributed during the year ..... 2, 648, 661, 550  
 Number of errors made in the distribution of same ..... 763, 511  
 Number of letters and pieces of paper-mail distributed to each error ..... 3, 469

The report shows an increase of over 400,000,000 pieces of mail handled on the postal cars, or nearly 20 per cent. This amount would have been still larger but for the yellow-fever epidemic in some of the States comprised in the fourth division during the summer and fall of 1878.

The record shows that while the equivalent of 2,648,661,550 separate and individual pieces of mail was distributed by the clerks and route-agents, 763,511 pieces were missent, or one piece in each 3,469 distributed.

## REPORT OF THE THIRD ASSISTANT POSTMASTER-GENERAL.

POST-OFFICE DEPARTMENT,  
OFFICE OF THIRD ASSISTANT POSTMASTER-GENERAL,  
*Washington, D. C., November 8,*

## EXPLANATION OF ACCOMPANYING TABLES.

SIR: I have the honor to submit the following report of the transactions of this office for the fiscal year ending June 30, 1879, and to call especial attention to the subjoined tables, forming part of the report, numbered from 1 to 19, inclusive, viz:

No. 1. Estimates of the appropriations required by the Post-Office Department for the service of the fiscal year ending June 30, 1879.

No. 2. Statement showing appropriations for the fiscal year ending June 30, 1879, and the expenditures made, by items, out of such appropriations, up to September 30, 1879.

No. 3. Statement exhibiting the receipts and expenditures, under appropriate heads, by quarters, for the fiscal year ending June 30, 1879, compared with the fiscal years ending June 30, 1878, and June 30, 1877.

No. 4. Statement showing receipts and disbursements at Treasuries and Post-offices during the fiscal year ending June 30, 1879.

No. 5. Statement showing receipts and disbursements at dead letter post-offices on account of the fiscal year ending June 30, 1879.

Nos. 6 and 7. Statements showing the number and value of postage stamps, stamped envelopes, newspaper-wrappers, and postal cards issued during the fiscal year ending June 30, 1879.

No. 8. Statement showing the number and value of official stamps and stamped envelopes furnished each of the executive departments during the fiscal year ending June 30, 1879.

No. 9. Statement showing the increase in the issues of postage stamps, stamped envelopes, newspaper-wrappers, and postal cards for the fiscal year ending June 30, 1879, over those of the preceding year.

No. 10. Statement showing the amount of dead mail-matter transmitted to the division of dead letters during the fiscal year ending June 30, 1879.

No. 11. Statement showing the disposition of letters opened by the division of dead letters during the fiscal year ending June 30, 1879.

No. 12. Statement showing the amount, classification, and disposition of unmailable matter received by the division of dead letters during the fiscal year ending June 30, 1879.

No. 13. Statement showing the number of foreign dead letters received and disposed of during the fiscal year ending June 30, 1879.

No. 14. Statement showing the number, classification, and disposition of dead registered letters during the fiscal year ending June 30, 1879.

No. 15. Statement showing the number of registered letters and circulars transmitted through the mails from each State and Territory of the United States during the fiscal year ending June 30, 1879.

No. 16. Statement showing the number of packages dispatched by registered through pouches from the post-office at New York, and by registered through-pouch offices, by months, during the fiscal year ending June 30, 1879.

No. 17. Statement showing the number and value of registered letters and packages forwarded during the fiscal year ending June 30, 1879, for the Office and Treasury Departments.



No. 18. Statement showing the operations of the registered-letter system in the cities of New York, Chicago, and Washington during the fiscal year ending June 30, 1879.

No. 19. Statement showing the increase in the amount collected as fees on registered matter at 25 leading post-offices during the fiscal year ending June 30, 1879, over the amount collected during the preceding year.

#### OPERATIONS OF THE BUREAU.

The work of this office is distributed among the divisions of finance, of postage-stamps, of dead letters, of registration, and of files and records, details of the operations of which are herewith presented, as follows:

#### DIVISION OF FINANCE.

The appropriations for the service of this office during the fiscal year amounted to \$822,700, and the expenditures to \$714,279.61, leaving an unexpended balance of \$108,420.39, or 13 per cent. of the appropriations. This saving is due to the fact that on the 1st of October, 1878, a new contract for stamped envelopes was entered into at a considerable reduction from the old contract rates, on which the appropriation was based.

The estimated amount of appropriations required to conduct the service of this office for the coming fiscal year is \$882,400, a decrease of \$2,000 from the amount appropriated for the current year. A detailed explanation of the estimates will be found among the papers accompanying the table (No. 1) of estimates attached to this report.

#### DEPARTMENT RECEIPTS AND EXPENDITURES.

The receipts and expenditures of the department during the fiscal year ended June 30, 1879, as shown by the books of this division, were as follows:

##### *Receipts.*

Letter-postage paid in money.....	\$254,901 41
Box-rents and branch offices.....	1,381,162 51
Fines and penalties.....	9,080 12
Postage-stamps, stamped envelopes, newspaper-wrappers, and postal cards.....	28,145,074 99
Dead letters.....	3,323 39
Revenue from money-order business.....	219,226 83
Miscellaneous.....	29,213 61
Total.....	30,041,982 86

##### *Expenditures.*

The total expenditures for the service of the year were.....	\$33,073,437 83
An excess over the receipts appertaining to and for the last fiscal year, supplied out of appropriations from the Treasury, of.....	3,031,454 96

The expenditures given above do not include the sum of \$376,461.63 paid on liabilities incurred during previous fiscal years.

The total receipts for the year were \$764,465.91 (or 2.6+ per cent.) more than those of the preceding year, and \$1,007,884.58 (or 3.4+ per cent.) more than the estimates therefor. The increase of receipts over the amount estimated is largely attributable to the revival of business, and the consequent increased demand for postage-stamps, postal cards, &c.,

the sales of which amounted to \$769,481.87 more than for last year, or \$2,387,559.23 more than for 1877.

Excluding official postage-stamps and money-order receipts for fiscal years, there is an increase of ordinary receipts over past fiscal years of \$671,703.27, or 2.3+ per cent.

Table No. 3, which accompanies this report, shows the receipts and expenditures by fiscal quarters, and the increase or decrease compared with previous years.

An exhibit of the condition of accounts of the last fiscal year, ending 30th of September, 1879, will be found in table No. 2, herewith.

In addition to the receipts stated above, there was drawn from the Treasury, on account of special and deficiency appropriations, of \$3,297,965.25, as follows:

To supply deficiencies in the revenues for the year ended June 30, 1879, act of June 17, 1878.....	\$3,000 00
For transportation of the mails, railroads, for 1878 and previous years, act of March 3, 1879.....	1 00
For transportation of the mails, deficiency, 1876 and previous years, act of March 3, 1879:	
Railroad routes.....	\$21,775 73
Star routes.....	4,481 29
Steamboat routes.....	750 00
Mail-messenger service.....	1,508 58
Foreign mail transportation.....	17,357 71

To pay Geo. H. Giddings, late contractor, deficiency, 1876 and previous years, act of March 3, 1879.....

To pay H. G. Boardman, postmaster at Milton, Vt., act of June 19, 1878.....

For payment of increased salary to letter-carriers, &c., act of June 28, 1879.....

3,297,965.25

#### ESTIMATES.

The estimated expenditures for the fiscal year ending June 30, 1881, are. \$39,900,000

The estimated revenue for the same year is..... 32,200,000

Leaving a deficiency to be appropriated out of the general Treasury of 7,700,000

Table No. 1, accompanying this report, furnishes the estimate in detail.

In estimating the revenue for 1880-'81 the item for official postage stamps was not stated separately, for the reason that official postage stamps and envelopes are, in a large measure, taking the place of official receipts, and the estimated revenue from this source is included in the receipts.

#### CONDITION OF DEFICIENCY APPROPRIATIONS.

The following statement will show the condition of the appropriations from the general Treasury to supply deficiencies in the postal receipts, viz:

1. For the fiscal year ended June 30, 1877, the amount unexpended was \$167,498.00, which, by operation of law, was carried into the next year, plus fund of the Treasury on the 30th June, 1879, leaving no amount available for the payment of unsettled liabilities incurred prior to June 1, 1877.

2. For the fiscal year ended June 30, 1878, an additional deficiency appropriation of \$166,392.27 was made, which amount was drawn from the Treasury to supply deficiencies in the postal receipts.

the Treasury and placed to the credit of the Post-Office Department for the payment of indebtedness on account of said fiscal year.

3. For the fiscal year ended June 30, 1879, the amount appropriated from the Treasury to supply deficiencies in the revenues was \$4,222,274.72, of which \$1,222,274.72 remains unexpended and available for unadjusted liabilities for said fiscal year.

The unpaid indebtedness of the department for the fiscal year ended June 30, 1879, is estimated at \$713,344.45, for the payment of which there is available, as above stated, the sum of \$1,222,274.72.

#### RECEIPTS AND DISBURSEMENTS FOR 1879.

The receipts and disbursements at Treasury and Post-Office depositories during the last fiscal year may be briefly summarized thus:

At Treasury depositories:	
Balance subject to draft June 30, 1878.....	\$1,780,280 09
Outstanding warrants, June 30, 1878.....	43,646 15
Aggregate receipts during the year ended June 30, 1879.....	10,745,715 60
<b>Total</b> .....	<b>12,569,641 84</b>
Amount of warrants paid during the year.....	9,896,823 48
<b>Balance at depositories June 30, 1879</b> .....	<b>2,672,818 36</b>
Outstanding warrants, June 30, 1879.....	52,484 13
<b>Balance subject to draft June 30, 1879</b> .....	<b>2,620,334 23</b>

Transactions at these depositories, in detail, with amount of increase or decrease, as compared with previous years, are shown in table No. 4, accompanying this report.

At Post-Office depositories:	
Balance subject to draft June 30, 1878.....	\$530,747 47
Deduct credit balance June 30, 1878.....	2,753 94
	527,993 53
Aggregate receipts during the year ended June 30, 1879.....	3,901,798 04
<b>Total</b> .....	<b>4,429,791 57</b>
Disbursements during the year.....	3,729,096 51
<b>Amount subject to draft June 30, 1879</b> .....	<b>700,695 06</b>

Table No. 5, submitted with this report, exhibits the receipts and disbursements at the different Post-Office depositories in detail.

#### CONTRACTS ENTERED AND ACCOUNTS KEPT.

During the year there were 3,895 contracts for mail service (including 1,150 sub-contracts) received from the Second Assistant Postmaster-General, and 12,700 orders of the Postmaster-General recognizing mail service not under contract, curtailing or extending service or modifying previous orders; being an increase of 1,224 contracts and of 3,764 orders, as compared with the previous year. These contracts were examined, verified, and entered upon the books of the division for reference when passing upon reports from the Auditor for the payment of mail-contractors and other creditors of the department. The number of such reports received and adjusted during the year was 33,950, (an increase of 4,650 over the previous year.)

Accounts were kept with the Treasury, 9 sub-treasuries, and 12,718 warrants were issued.

Accounts were also kept with 99 Post-Office depositories, the sum of \$3,901,798.04, of which \$2,890,896.17 arose from the depository offices themselves; \$924,782.49 from deposits offices; and \$86,119.38 from collection drafts. Against the drafts in the depository offices 21,916 drafts were issued, amounting to \$2,510,922.73. In addition to the amount paid out by draft, the sum of \$1,218,173.78 was paid to route-agents, railway-post-office clerks, messengers, and letter-carriers, by the postmasters authorized to make such payments, the accounts for which were rendered monthly to the office.

Upon the deposit desk of this division a record of 10,847 drafts was kept (an increase of 8,066 over previous year); 23,745 copies of deposit were received and entered (an increase of 12,323 over previous year); 13,323 circulars of instruction and inquiry, with the auditor's statements of account, were forwarded to postmasters; and 1,222,348 letters from postmasters relative to balances due were received and entered upon the books, and properly referred or answered.

#### DIVISION OF POSTAGE-STAMPS, STAMPED ENVELOPES, AND POSTAL CARDS.

The operations of this division during the year may be summarized as follows: The number of ordinary postage-stamps issued to postmasters for sale to the public was 774,358,780, of the value of \$20,111,111.11; of special stamps for the collection of postage due (issued in answer to the wants of postmasters), 15,667,600, of the value of \$36,363.63; of newspaper and periodical stamps, 1,552,172, of the value of \$1,081,081.08; of postal cards, 221,797,000, of the value of \$2,217,970; of stamped envelopes, 80,806,700, of the value of \$2,160,417.92; of envelopes bearing a request to return, 67,058,250, of the value of \$2,139,704.10; of newspaper wrappers, 29,697,000, of the value of \$355,218.90; of official postage-stamps issued to the several departments for official use, 14,201,822, of the value of \$624,909.09; of official stamped envelopes and wrappers, 17,209,150, of the value of \$469,011.90; making a total number of 1,222,348,474 and a total value of \$29,538,950.93.

These issues show an increase in value over those of the previous year as follows: Of ordinary stamps, \$648,641, or 3.33 per cent.; of newspaper wrappers, \$50,573.30, or 16.6 per cent.; of postage due stamps, \$211,670, or 10.55 per cent.; and of official postage-stamps, \$624,909, or 1.11 per cent. They show, also, a decrease in the value of the issues of the following: Of newspaper and periodical stamps, \$5,433.14, or .04 per cent.; of ordinary stamped envelopes, \$257,684.99, or 10.65 per cent.; of request stamped envelopes, \$43,321.15, or 1.98 per cent.; and of stamped envelopes, \$5,541.20, or 1.16 per cent.

The total increase in the value of the ordinary issues (including postage-due stamps, which were issued for the first time on the 9th of last) was \$970,402.02, or 3.53 per cent.; of the ordinary and official issues combined, \$971,766.17, or 3.40 per cent.

In addition to the foregoing articles there were issued 5,522 registered-package envelopes, 19,917,950 post-office envelopes (including the free (penalty) envelopes), and 1,505,000 dead-letter envelopes.



ing a total of 26,951,950; also, 2,529 receipt-books used in the collection of postage on newspaper and periodical matter sent through the mails.

The following shows the number of postmasters' requisitions filled during the year:

For ordinary postage-stamps.....	110,959
For postage-due stamps.....	40,344
For newspaper and periodical stamps.....	6,949
For ordinary stamped envelopes and wrappers, plain.....	50,946
For special-request stamped envelopes.....	67,500
For postal cards.....	58,602
For official postage-stamps.....	28,432
For official stamped envelopes and wrappers.....	2,866
For registered package envelopes.....	44,173
For post-office envelopes.....	39,393
For newspaper and periodical receipt-books.....	2,529
<b>Total.....</b>	<b>452,693</b>

The increase in this total over the total of requisitions filled during the preceding year is 34,391, or 8.2 per cent.

To fill these requisitions the following number of packages was made up and forwarded:

Of ordinary stamps.....	112,467
Of postage-due stamps.....	40,344
Of newspaper and periodical stamps.....	6,949
Of ordinary stamped envelopes.....	73,702
Of special-request stamped envelopes.....	52,636
Of postal cards.....	61,803
Of official postage-stamps.....	28,455
Of official stamped envelopes.....	5,633
Of registered package-envelopes.....	44,356
Of post-office envelopes.....	66,627
Of newspaper and periodical receipt-books.....	2,529
<b>Total.....</b>	<b>495,501</b>

This shows an increase over the preceding year of 34,814 packages.

The number of packages lost during the year was five, and in each case the loss was from causes over which the department had no control.

Besides the business represented by the foregoing figures, a large amount of work was done in keeping the accounts of postmasters, in the preparation of the permanent records of the department, in correspondence, in the auditing of claims for losses by fire, in the examination of newspaper receipt-books returned to the department, and in a number of other matters which it would be difficult to enumerate.

#### POSTAGE COLLECTED ON SECOND-CLASS MATTER.

The amount of postage collected during the year on newspaper and periodical matter mailed from regular offices of publication to subscribers is as follows:

On 42,958,033 pounds, at 2 cents per pound.....	\$859,160 66
On 8,167,467 pounds, at 3 cents per pound.....	245,024 01
<b>Total.....</b>	<b>1,104,184 67</b>

This total shows an increase over the amount collected during the previous fiscal year of \$79,003.69, which is very gratifying, in view of the fact that since the 1st day of May last the rate of postage on newspaper and periodical matter has been reduced to a uniform rate of two cents per pound, under the act of Congress approved March 3, 1870.

The whole number of post-offices at which newspaper and periodical postage is collected is 4,188, being 241 more than during the year.

#### WEIGHT OF SECOND-CLASS MATTER MAILED.

The following table shows the number of pounds of newspaper and periodical matter mailed, and the amount of postage collected thereon, at six of the principal post-offices in the United States:

Post-offices.	Matter mailed weekly and of tenor, two cents per pound.	Other matter, three cents per pound.	Amount of postage.
Boston .....	2,867,892	370,482	\$68,472
Chicago .....	2,716,198	548,888	90,790
Cincinnati .....	1,829,139	237,210	43,699
New York .....	13,262,246	2,619,416	343,827
Philadelphia .....	1,650,636	868,340	59,182
Saint Louis .....	2,071,634	185,583	47,000
Total .....	25,403,745	4,829,929	652,972

#### POSTAGE-DUE STAMPS.

Under a provision in the act of Congress approved March 3, 1879, authorizing a change in the mode of collecting postage due on mail arriving at destination through the mails, the department began on the 9th of May special stamps, called postage-due stamps, of denominations of 1, 2, 3, and 5 cents, and subsequently of the same denominations of 10, 30, and 50 cents.

Before the 1st of July every office in the country was provided with a supply of these stamps, and the new system of collecting postage due is now fairly in operation. It is expected to result in a considerable increase of revenue to the department from that source. The stamps may be described as follows: Large figures, representing the denomination, are placed in the center of the stamp, and are surrounded by an oval of very delicate lathe-work. On the upper border of the stamp the words "Postage Due" are printed in white letters; on the lower border is the denomination, in letters of the same kind. On either side of the oval are the letters "U. S." in small white shields. Around the oval is a form of complex character, described upon an oblong tablet. The general design is the same for all the stamps, the only difference being in the figures and lettering for the several denominations. The color of all is the same—a reddish-brown.

#### INTERNATIONAL POSTAL CARDS.

The department has not yet begun the issue of the 2-cent international postal card, authorized by the act above referred to, the plates for the same having only recently been completed by the Treasury Department. The contractors, however, are making preparations to begin manufacturing at an early date, and it is expected that they will be in use on the 1st of January next.

#### DIVISION OF REGISTRATION.

The total number of letters and parcels registered during the year 1897 was 5,429,022, of which 4,227,079 were domestic letters, 203,497

parcels of third and fourth class matter, 163,684 letters registered to foreign countries, 3,097 parcels of third and fourth class matter registered to foreign countries, and 831,665 letters and parcels of official matter forwarded for the government, and by law exempted from the payment of registry fees. The amount of registry fees collected during the year was \$459,735.70, an increase over the preceding year of \$44,736.40. The increase in the number of letters and parcels forwarded was 530,218. The actual losses of registered matter during the year were small, consisting of only 989 letters and parcels, or, say, one out of every seven thousand forwarded.

Table No. 15 accompanying this report shows in detail, by quarters, the number of domestic, foreign, and free letters and parcels that were registered in each State and Territory during the year, the amount of fees collected, and the increase over the preceding year.

Table No. 16 exhibits the number of packages dispatched in registered through pouches from the New York office during the year.

In table No. 17 will be found an exhibit of registered matter forwarded for the Post-Office and Treasury Departments during the year. It will be observed that the value of this matter aggregates the enormous sum of \$1,031,517,445.10.

Table No. 18 contains a statement of the registry business done during the year at the post-offices at New York, Chicago, and Washington.

In table No. 19 are some interesting statistics, showing the amount of fees collected (excluding free matter) at the twenty-five leading offices of the country. The fees at these offices amounted to \$78,467.90, or 17.07 per cent. of the total amount collected, and an increase over the previous year of \$20,998, or 36.25 per cent. The remaining offices collected \$381,267.80, or 82.93 per cent. of the total amount, and an increase over the previous year of \$24,189.70, or 6.77 per cent. The New York post-office collected \$27,737.50, or 6.03 per cent. of the total amount, and an increase over the previous year of \$8,789.80, or 46.04 per cent.

#### REGISTRATION OF THIRD AND FOURTH CLASS MATTER.

In the annual report of last year brief mention was made of the extension on the 1st October, 1878, of the registry system to third-class matter, since then by law subdivided into two classes designated as the third and fourth classes. The step was taken after careful consideration. The law provided generally for the registration of valuable matter, but the system had been confined to letters or matter chargeable with first-class rates of postage. There appeared to be no good reason for the limitation.

The law required the admission into the mails of samples of merchandise and other small articles, and it seemed to be only the duty of the department to extend to this class of matter the additional security afforded by registration, especially since that portion of the work could be done at a profit. The success of the measure has been amply demonstrated. No serious difficulties have been experienced in carrying it into practical operation, and as public attention has become directed to its advantages the business has steadily and rapidly increased.

The postmaster at New York, in reporting the operations of the registry division of his office during the fiscal year, refers as follows to the registration of third and fourth class matter:

The extension of the registry system on October 1, 1878, to include third and fourth class matter, has been the great event of the year.

From the beginning it was regarded by the public with great favor, and the amount of such matter registered has steadily increased and will continue.

Of the 69,644 parcels of third and fourth class matter sent registered from there have been but five complaints of loss, and these are on stage-routes in Western Territories, and may prove after investigation to be delays through mess. It speaks well for the efficiency of the registry system that such an amount of heavy matter can be suddenly thrown into it, and the only effect of showing the perfection of the system. There have been scarcely any complaints of losses of contents of any of the parcels sent, and most of those investigations are mistakes on the part of the sender. A larger amount of sample and merchant parcels, formerly sent in ordinary mail, now go forward registered; consequently a great diminution in the ordinary mail complaints respecting such parcels. It is not well to be otherwise, as the registered matter being inspected before it is sent, all imperfections as to address, insecure wrapping, &c., are corrected by the time the evidence of their being mailed is positive, and the parcels are carefully packed before dispatch. This cannot be obtained where they are dropped into the mails.

#### REVISION OF THE REGISTRY SYSTEM.

The registry system was given much attention during the year. The rules governing its conduct were thoroughly revised in preparation for a new edition of the Postal Laws and Regulations, and the system was greatly simplified. Useless details were dispensed with, and various improvements added. The work of conducting the system has been greatly lessened, without detracting from its security.

The principal changes may be noted as follows:

1. *Abolition of distributing offices.*—By this change all registered matter is mailed direct to the office of destination without the intervention of the distributing offices, which are thus saved the labor of making new invoices and keeping records of registered packages in transit.

2. *Extension of through-pouch system.*—As a result of the changes above, the through-pouch system, the operations of which have been explained in previous reports, has been largely extended by the creation of many new through-pouch offices, and the multiplication of changes between offices authorized to use the through pouches. These changes have greatly facilitated the dispatch of registered matter at the same time increased its security.

3. *Abolition of the return-registered-letter bill.*—The registered-letter bill and the return-registered-letter bill were in effect duplicate bills as between postmasters, the former being retained at the receiving office, and the latter returned to the dispatching office as a voucher. The registered-letter bill has been made to serve both purposes, requiring the receiving postmaster to return it with his acknowledgment to the dispatching postmaster, and a considerable saving of labor was accordingly effected by dispensing with the one bill. The single bill now in use has been designated as the Registry Bill.

4. *Combination of records.*—The "Registered-Receipt Book" and "Account of Registered Letters Sent," two separate records kept at the dispatching office of matter received from the public and forwarded, have been combined into one book designated as the "Registration Book, or Record of Matter Registered and Dispatched." At the office of destination two separate records, of "Registered Letters Received for Delivery" and "Account of Registered Letters Delivered," have been united in one, called the "Record of Registered Matter Received and Delivered." Duplicate entries of registered matter handled have been avoided at both the mailing and dispatching offices, leading to a very material reduction of labor.

5. *Adoption of blanks on card form.*—The registry-return receipt, which by law the sender of a registered parcel is entitled to (and from the addressee) has been placed on cardboard of the size, for



quality of the postal card in public use, and forwarded through the mails without inclosure in envelopes. The plan is really that of adapting the postal card to official purposes. On one side of the card is a form for the signature of the addressee, and on the other the name and residence of the sender so arranged as to constitute a return address. Less writing is required on the card than on the paper form it superseded; and as each card takes the place of a paper form and two envelopes, the great economy of clerical labor and material will be readily apparent in view of the volume of registry business transacted.

The registry bill previously referred to has also been put on card form, with equally beneficial results. This improvement has been the subject of warm commendation from postmasters. As there can be no doubt that this improvement, so advantageously begun in the registry system, is equally well adapted to other branches of postal business, I respectfully recommend that it be at once put into operation wherever it is applicable.

#### DIVISION OF DEAD LETTERS.

The whole number of dead letters and packages received and disposed of during the year was 2,990,513, a decrease of 190,292 from last year's receipts.

The fact that while there has been an increased number of letters mailed annually in this country, a reduced number has been sent to the department as dead, presents an anomaly which can be explained only upon the theory of increasing efficiency of the delivery service and the growing popularity of the return-request system.

The extent of the latter will be illustrated by the statement that of the 533,934 letters mailed in a single day at Baltimore, Boston, New York, and Philadelphia 287,835\* bore upon the envelope some clew by which they could be restored to the writer if undelivered, without the intervention of the Dead-Letter Office.

Of the letters opened 16,007 contained \$31,591.49½; 13,755 contained drafts, checks, notes, money-orders, &c., to the value of \$1,105,762.07; 47,797 contained postage-stamps to the value of \$2,387.53; 24,372 contained receipts, certificates, paid notes, &c.; 24,024 contained photographs; and in 38,306 letters and parcels were found jewelry, books, clothing, merchandise, and miscellaneous articles in endless variety, from a small bottle of choice perfumery to a large box of Limburger cheese.

The increase in the number of letters containing money orders and postage-stamps, and the decrease of those containing money, is attributable to the retirement of fractional currency, which formerly furnished a convenient means of making small remittances by mail.

The mode of treating insufficiently prepaid letters has been slightly modified during the past year, and the present system seems to be the most satisfactory of any which has yet been devised for disposing of that unfortunate class of correspondence. It is as follows: Those that bear a name and address, or a business card, post-office box, or other designation by which the writer can be identified, are immediately restored to the owner, or his attention invited to the deficiency of postage by the postmaster at the mailing office. Of the balance, all "local" or "drop" letters are delivered by the postmasters to the persons addressed, upon payment by them of the necessary postage, after due notice of the fact and cause of detention. The remainder are sent to the Dead-Letter Office, and are at once examined by an expert, who, taking into consid-

\* These figures are based upon the results of an actual count during the first seven days in November, 1879.

eration the places of origin and destination of each letter, whether it can be returned to the writer in less time than would be required to collect the postage from the addressee and forward it to destination. And each letter is then treated in the way deemed to be the quicker. Wherever a doubt exists, or where the difference is very small, the postage is collected and the letter forwarded, thus serving the seal intact.

The amount of money deposited to the credit of the Post-Office Department from letters which could not be restored to the owners was \$3,323.39.

The value of stamps received for postage on unpaid and short mail-matter forwarded to address, and upon unclaimed third and fourth class matter returned to senders, was \$4,471.70.

Of the whole number (5,262,241) of registered letters and postcards mailed in this country during the year, but 2,193 found their way to the Dead-Letter Office; and of these 1,982 were successfully restored to the owners, 177 were filed subject to identification, and 34 are on hand; that is, opened and sent to postmasters for delivery, and the remainder not yet reported.

The number of undelivered foreign registered letters was 3,683, all of which were all returned unopened to the countries of origin and received acknowledgment.

The number of ordinary foreign dead letters was 147,886, which were mailed in the United States and returned unclaimed by foreign owners was 94,669. This difference is accounted for by the mail habits of foreigners, who upon reaching this country either fail to give a correct post-office address to their kinsmen in the old country, or do not profit by their privilege to have mail-matter forwarded free of place to another without additional postage charge.

Tables Nos. 10 to 14 inclusive, herewith submitted, contain miscellaneous details of the work accomplished in this division during the year.

#### COMPENSATION OF POSTMASTERS.

In the annual report for the fiscal year ending June 30, 1877, a large share of attention was given to the abuse in the sale of postage stamps by reason of the inducements offered postmasters by the large commissions then forming the basis of their compensation, and it was recommended that the law be changed to compensate postmasters at fixed rates in class offices by commissions on stamps canceled on matter deposited for mailing.

This recommendation was favorably acted upon by Congress, and the new system went into effect on the 1st July, 1878. The beneficial effects of the change have already been made apparent. Estimating the increase in compensation at the same rate as the increase in the sale of stamps (2.8 per cent.) would give the amount required for that purpose under the old system at \$8,201,231.57, or \$1,015,691.82 more than the amount actually expended under the new system. This latter saving may accordingly be taken as the annual saving by the change. From the pecuniary advantages to the department, the most important benefits have resulted from curing the demoralization wrought among postmasters by speculations in stamps to which they were tempted by the old method of compensation.

I have the honor to be, very respectfully, your obedient servant,

A. D. HAZEN

Third Assistant Postmaster-General.

Hon. D. M. KEY,  
Postmaster-General.

## OCEAN MAILS.

*Statement showing the amounts recognized in payment of ocean-mail transportation performed during the fiscal year ended June 30, 1879.*

## TRANSATLANTIC MAILS.

By Cunard Line, 52 trips from New York.....	\$34,648 16		
By Cunard Line, 33 trips from Boston.....	1,194 42		
		\$35,842	58
By Hamburg Line, 52 trips from New York.....		21,968	49
By Liverpool and Great Western Line, 37 trips from New York.....		23,620	09
By North German Lloyd Line, 52 trips from New York.....	21,226 07		
By North German Lloyd Line, 24 trips from Baltimore.....	13 68		
		21,239	75
By White Star Line, 51 trips from New York.....		22,120	68
By Inman Line, 52 trips from New New York.....		21,434	97
By Anchor Line, 47 trips from New York.....		2,227	86
By Canadian Line, 51 trips from New York.....		803	50
By American Line, 44 trips to Philadelphia.....		1,531	09
By General Transatlantic French line.....		2,983	63
			\$153,749 64

## TRANSPACIFIC MAILS.

To Japan and Hong-Kong, China:			
By Pacific Mail Line.....	\$809 18		
By Occidental and Oriental Line.....	1,156 73		
		1,965	91
To Shanghai, China:			
By Pacific Mail Line.....	308 20		
By Occidental and Oriental Line.....	272 80		
		581	00
To New South Wales, other Australian colonies, New Zealand, Fiji Islands, and the Sandwich Islands:			
By Pacific Mail Line.....		8,457	48
			11,004 39

## MISCELLANEOUS.

To and from the Isthmus of Panama, Central America, and South Pacific:			
Outward mails.....	\$8,644 44		
Inward mails.....	7,181 85		
		15,826	29
To Mexico.....		4,931	34
To Cuba.....		5,366	22
To and from other West India Islands:			
Outward mails.....	3,131 15		
Inward mails.....	710 76		
		3,841	91
To Brazil.....		3,061	64
From Uruguay.....		44	90
To Venezuela.....		744	09
To Canada.....		337	64
			34,154 03
Total.....			198,908 06

ARGUMENT OF HON. A. A. FREEMAN, ASSISTANT  
 POSTMASTER-GENERAL FOR THE POST-OFFICE DEPARTMENT  
 IN RE COMMONWEALTH DISTRIBUTION COMPANY  
 POSTMASTER LOUISVILLE, KENTUCKY.

MAY IT PLEASE THE COURT: This is an application for a mandamus injunction to restrain the postmaster at Louisville from obeying the order of the Postmaster-General, directing her to refuse to deliver letters addressed to the Commonwealth Distribution Company, and to deliver the same to the Dead-Letter Office. It involves the question as to whether the direction of the Postmaster-General has the sanction of the law. It is admitted that the action of the postmaster in withholding letters cannot be justified unless the instruction of the Postmaster-General is supported by authority of law.

It is the law rather than the instruction of the Postmaster-General that must justify her action. Within the last half century it has been said in this country and in England on the subject of the powers, and duty of the government in the transmission of mail. As late as the 8th of April, 1845, Sir James Graham declared in the House of Commons that the power to open and examine letters had been intrusted to the Executive Government from the earliest times bearing date even prior to the Revolution. That it was too much to expect that the postal authority of the government, conducted by responsible servants of the Crown, should be made the medium of communication in the promotion of violent and treasonable designs against the safety of the state, and against peace and good order. (Parliamentary Debates, vol. 79, p. 318.)

This doctrine was stoutly resisted at that time, and happily it has been obtained in this country.

The policy of our legislature has ever been to exclude improper matter altogether, and to preserve sacredly the inviolability of mail matter admitted to be sent. Once admitted that matter is unmailable, exclusion follows. On the other hand, when it is admitted that matter is mailable, it becomes the duty of the government to deliver it with due celerity and certainty, and to deliver it promptly. When a question like the one now presented arises as to whether a matter belongs to the two classes the matter belongs that any embarrassment can be avoided.

If the letters in controversy are mailable matter, then the postmaster is entitled to have them delivered to him; if not, he has no such duty in them as will entitle him to sustain the action. It becomes the duty of the court, therefore, to ascertain what the law is concerning this subject.

The first provision of law in relation to lotteries is found in the act of the act approved July 27, 1863, and is as follows:

That it shall not be lawful to deposit in a post-office to be sent by mail, or circulars concerning lotteries, so-called gift-concerts, or other similar enterprises offering prizes of any kind under any pretext whatever.

This was followed by the act of June 8, 1872, section 149 which provided—

That it shall not be lawful to convey by mail, nor to deposit in a post-office sent by mail, any letters or circulars concerning illegal lotteries, so-called gift-concerts, or other similar enterprises offering prizes, or concerning schemes intended to deceive and defraud the public for the purpose of obtaining money on false pretenses, and a penalty of not more than five hundred dollars, nor less than one hundred dollars, with costs of prosecution, is hereby imposed upon any person convicted in Federal court of the violation of this section.



This latter act was amended by section 2 of the act approved July 12, 1876, by striking out the word "illegal."

It became, therefore, under this act, unlawful to carry in the mail any letter concerning any character of lottery, whether legal or otherwise. The Postmaster-General, in pursuance of what he understood to be the law, instructed postmasters to refuse to receive or deliver letters addressed to lottery companies or their agents as such. This order was based on what he regarded as a fair and legal presumption that letters addressed to lottery companies "concern" a lottery.

I shall endeavor to show by reason and authority that this is the correct construction of the law, and that the order in question is simply in the line of carrying out the intention of Congress.

I desire to cite a case in which a court of very high authority laid down a rule by which the nature of the contents of a sealed letter might be presumed, without any other evidence of its contents than the circumstances under which it was being carried.

The sixteenth section of the act of April 30, 1810, provided that no person except a mail-carrier should receive for carriage over a mail route any letter or packet, excepting only "such letter or letters as may be directed to the owner or owners of such conveyances and relating to the same, or to the person to whom any packet or bundle in such conveyance is intended to be delivered." (2 Statutes, page 596.)

The supreme court of Massachusetts, in construing this statute, in the case of *Dwight vs. Brewster* (1 Pickering, 50), held as follows:

That section prohibits any person otherwise than the Postmaster-General or his deputies, or persons by them employed, from being concerned in setting up or maintaining any foot or horse post, stage, wagon, or other stage-carriage, on any established post-road, or from one post-town to another, on any adjacent or parallel road, for the purpose of carrying any letters or packets, except newspapers, &c., and punishes by penalty the carrying of letters, &c., except such as may be directed to the owner of the conveyance, and relating to the same, or the person to whom the packet or bundle in such conveyance is intended to be delivered. The carrier of the mail is not prohibited from taking packets and bundles any more than passengers. He will have a right, then, under this section to take letters directed to the owners of such packets or bundles. If, therefore, a letter had been proved to have been sent with a parcel of bank notes, no offense would have been committed. The case of *Bennett vs. Clough* is similar to the present one. There a parcel containing bank-notes, stamps, and a letter was sent by a common carrier, and there being no evidence of the contents of the letter, the presumption of law was that it related to the parcel sent. So here, supposing a letter had been sent, unless its contents were proved, it would be presumed to relate to the bundle.

If a letter sent by a common carrier directed to the consignee of a package conveyed at the same time raises a presumption that the contents of the letter relate to the package, with how much stronger reasoning may it be said that a letter addressed to a company or corporation raises the presumption that it relates to or concerns the business of that corporation? This presumption is supported by the almost universal experience of mankind. It is not unusual that letters are addressed to private individuals which do not concern their particular calling or avocation.

The subject-matter of communications thus addressed is of such a variety of character as to be subject to no classification, and give no indication in their address of the subject-matter of their contents. In the case of private partnerships the presumption that the letter addressed to such partnership relates to or concerns the business of the partnership, while stronger than the case of private individuals, is nevertheless not so conclusive as in the case of corporations. So strong, however, is the presumption that letters addressed to a person at his place of business

relates to the business of the person addressed, that it was proved in the case of bankrupts—

By 12 and 13 Vict., c. 106, s. 124, the court of bankruptcy may order that for a period of three months from the date of any such order, all posted letters directed to any bankrupt at the place of which he shall be described in the order, for adjudication of bankruptcy shall be redirected, readdressed, sent, or delivered to the postmaster-general or the officers acting under him, to the official or other assignee or other person named in such order; and upon notice by transmission of a copy of any such order to the postmaster-general or the officers acting under him, the official or other assignee or other person named in such order, of the making of such order, it shall be lawful for the postmaster-general or such officers as aforesaid, in England, Scotland, or Ireland, to readdress, redirect, send, or deliver all such posted letters to the official or other assignee or other person named in such order, as aforesaid; and the court may, upon application to be made for that purpose, make such order for a like purpose or for any other less period as often as may be necessary. (Fisher's Common Law Digest, page 6855.)

It was accordingly held in *Meirelles vs. Banning* (2 Barnwell & Phillips, 909) that—

Letters having arrived at a post-office, addressed to a party who had become bankrupt, the assignee, (in that character) demanded them of the postmaster, and believing *bona fide* that the assignee was entitled to have them for the purpose of a commission, delivered them up; this having been the practice of the office in similar circumstances for more than thirty years. Held, that the postmaster was liable under 9 Anne, c. 10, s. 40, for wittingly, willingly, and knowingly delivering up letters, and causing them to be detained and opened.

The presumption that letters addressed to a corporation concerned with lottery business for which the corporation was chartered is in fact rather than an absolute conclusion of law than a mere presumption. Any presumption to the contrary involves the assumption as a matter of law that the corporation is acting *ultra vires*.

The company on whose motion these proceedings are had, and in consequence of which letters have been detained, has no authority of law for the transaction of other than lottery business. It has no social relations to be maintained or preserved through the medium of the mails, and its powers being defined and regulated by law, it is not empowered to transact business of a general character.

I have so far treated the question as if lottery companies were on an equal footing towards the government the position of ordinary corporations, chartered for the purpose of promoting agriculture, science, the arts, or other matters of general interest to the public. I submit, however, that a clear distinction exists between lottery companies, although authorized by law, and other institutions of the character mentioned.

Leaving out of view altogether the *morale* of the question, it is sufficient to say that the highest recognition they have ever received at the hands of the courts is that of mere toleration.

The Supreme Court of the United States, in the case of *Barron vs. The Mayor of Baltimore* (10 Wheaton, page 402), in discussing the right of a lottery company authorized by an act of Congress, observes :

However questionable may be the policy of tolerating lotteries, there is no question respecting the policy of removing, as far as possible, from those who are concerned in them, all temptation to fraud.

It is placed in the same category with the selling of intoxicating liquors, gaming, &c. (Bishop on Criminal Law, vol. 1, page 493.)

By the statute 10 and 11, W. III, c. 17, all lotteries are declared to be public nuisances, and all grants, patents, and licenses for the sale of tickets to be contrary to law. (2 Blackstone, page 167.)

The act of Congress which declares that no letter or circular "concerning" a lottery shall be carried in the mail, recognizes this fact.

If lottery companies possess the same right to use the mail as

vested in private citizens, such an act of Congress would unquestionably render null and void the restriction upon carriage of the excluded matter by private post, for while Congress under the Constitution possesses plenary powers over the subject-matter of the establishment of post-offices and post-roads, yet the exercise of the power of exclusion must be confined to matter deemed injurious to the public morals, or in some manner detrimental to the common interests, otherwise the excluded matter may be carried by private post, for the power to prohibit the carriage of any special class of legitimate correspondence by private post rests upon the existing fact that mail facilities for that special class of correspondence is provided by the public post, and on the failure of such facilities, the government abandoning the monopoly as to that class, the reason of the restricting and the restriction itself fall together.

That the lottery business has a "demoralizing influence upon the people" is a fact that has been repeatedly recognized, both by the courts and by Congress.

The policy of the law is to widen and extend the range of mail facilities to the citizen for the transaction of legitimate business, and to deny it altogether for the purposes of promoting the business of lottery companies. There is every presumption of law in favor of the former; the sanctity of his right to use the mail is regarded as inviolate and perfect. Yet even this right does not permit the private citizen under cover of the seal to use the mail for prohibited purposes. In the language of the Supreme Court of the United States in *Ex parte Jackson* (6 Otto, 627)—

Whilst regulations excluding matter from the mail cannot be enforced in a way which would require or permit an examination into letters or sealed packages subject to letter postage, without warrant, issued upon oath or affirmation, in the search for prohibited matter, they may be enforced upon competent evidence of their violation obtained in other ways; as from the parties receiving the letters or packages, or from agents depositing them in the post-office, or others cognizant of the facts.

If this right of the citizen is subject to this restriction as declared by the Supreme Court, how much less is the right of a corporation, whose chartered existence is a living invasion of the social law; whose only chartered use of the postal service is to violate its express law, which declares that nothing "concerning" it shall be carried in the mails. No circulars and no letters, sealed or unsealed, that "concern" a lottery shall be sent in the mails.

But it is insisted for the company that, notwithstanding the act of Congress prohibiting the transmission of letters "concerning" lotteries, lottery companies are nevertheless entitled to the use of the mails for the transmission of all matter declared by law to be mailable; that while neither the company nor individuals have a right to send letters or circulars "concerning" a lottery, such company and its correspondents have, in common with all other citizens, the right to use the mails for the transmission of mailable matter; that if a letter addressed by a private individual to a lottery company "concerning" a lottery is unmailable, the same is equally true of such a letter addressed by one private individual to another; that the authority of a postmaster to detain a letter is the same in either case, and that if he is not authorized to detain letters in the one case on account of any suspicion he may have of its contents, he is equally unauthorized in the other.

In short, that while he may refuse to transmit or deliver letters "concerning" a lottery, yet he must do so at his peril. That if in the attempt to discharge this duty he should unwittingly detain a letter not subject to detention, he is guilty of a violation of section 3891 of the Revised

Statutes, which prescribes a *heavy penalty* for unlawfully delaying, or opening letters.

If this be a correct construction of the law, and a fair int of the right and duties of postmasters acting thereunder, at once evident that the statute is a dead letter, and cannot be. It is something more; it is a snare to entrap the honest public official.

That a postmaster may, under some circumstances, lawfully detain a letter seems clearly implied by the wording of section 38 Statutes, which provides "that any postmaster who shall detain in his office any letter or other mail matter, &c., *which is not prohibited by law, with intent,*" &c.

It is not, therefore, every detention of *strictly mailable* matter unlawful.

Section 3937 Revised Statutes provides that—

All domestic letters deposited in any post-office for mailing, on which no postage is wholly unpaid, or paid at less than one full rate as required by law, lawfully free, and duly certified letters of soldiers and sailors and marine bands of the United States, shall be sent by the postmaster to the Dead-Letter Office at Washington.

Again, section 3895 provides that—

All letters, packets, or other matter which may be seized or detained in violation of law shall be returned to the owner or sender, or otherwise disposed of as the postmaster-General may direct.

It is, therefore, the *unlawful* detention of *mailable* matter constitutes the offense. Let us admit, then, for the sake of the argument, that lottery companies have the same right to use the mails as that which is enjoyed by other corporations, or by individuals, for the transmission of their matter. What then becomes its duty, and what the duty of the postmaster under the law? We think it will hardly be questioned that under a statute which makes a letter "concerning" a lottery company's matter unmailable, a letter addressed to a lottery company is *absolutely* unmailable.

The law excludes from the mails all liquids, poisons, glass, inflammable materials, obscene books, lottery letters and circulars, and all other matter which from their form or nature are liable to destroy, deface, or otherwise injure the contents of the mail-bag, or the person of a postman engaged in the postal service. Here is a very large class of matter, embracing thousands of articles, many of them useful, and many of them absolutely essential to the comfort of mankind. Many articles are unmailable on account of their material, others on account of their form, and still others on account of their supposed contents. In determining whether any article presented for mailing is excluded by the prohibition, or belongs to either one of the classes of unmailable matter, the postmaster is bound to exercise a sound discretion, and is not to be presumed that the law requires him to exercise that discretion at his peril. It is equally unlawful for him to detain mailable matter, or to forward unmailable matter. How, for instance, is the postmaster to determine whether a book offered for mailing is obscene? Is it to be calculated to injure the contents of the mail-bag, or to injure the person of any one engaged in the postal service? Are lottery tickets unmailable. Must he test the suspected article? Poisonous articles are excluded. Must he call in the aid of a chemist? Or, must he exclude all articles be excluded by him at the peril of a heavy fine and imprisonment if he should make a mistake?

Such a construction of the law seems absurd. It is subm



all cases of this character it is not an unreasonable requirement to expect the sender of the questionable article to remove a doubt which he himself has raised. He, and he alone, can do it, and that, too, without expense or without violating the rights of any one. He ought to consider that the masses of the people, supposed to be represented by the law, have rights to be protected in common with himself.

It is freely admitted that many articles which are declared by law to be unmailable may be sent under the cover of a seal. A poison may be so concealed and sent; but if the usual sign used by druggists to indicate poison were printed on the envelope to warn persons handling it of its dangerous contents, it will hardly be contended that the sanctity of the seal would insure its transmission. The determination of these and similar questions involves the exercise of something more than merely ministerial functions. Certain matter is excluded from the mails on account of its *weight* alone. In the determination of the question of the mailability of articles of this character, nothing is left to the discretion of the officer.

But whether the contents of a letter "concern" a lottery, or are "liable to destroy, deface, or otherwise *injure* the contents of the mail-bag, or the *person of any one engaged in the postal service*," are not ministerial questions, but are judicial in their character, and must be solved in the exercise of a sound discretion, by the aid of such practical appliances as may be in the reach of the officer whose judgment is thus appealed to.

My argument thus far has been based on the assumption that lottery companies are entitled to use the mails for the transaction of other than lottery business. Now, may it please the court, I have the honor to submit, that under a fair interpretation of the postal laws and the laws regulating the powers of corporations, lottery companies are not entitled to use the mails for any purpose, and that the obvious effect of the statute forbidding the transmission of letters and circulars "concerning" a lottery is to interdict the transmission of any letter or circular addressed to a lottery company or its agent as such.

The Commonwealth Distribution Company, although chartered by the State of Kentucky, is not a citizen of the United States.

Mr. Chief Justice Taney, in delivering the opinion of the court in the case of the Ohio and Mississippi Railroad Company *vs.* Wheeler (1 Black, 295), said:

In the case of the Bank of Augusta *vs.* Earle (13 Pet., 512) the court held that the artificial person or legal entity known to the common law as a corporation can have no legal existence out of the bounds of the sovereignty by which it is created; that it exists only in contemplation of law and by force of law; and where that law ceases to operate the corporation can have no existence. It must dwell in the place of its creation.

It had been decided in the case of The Bank *vs.* Deveaux (5 Cr., 61), long before the case of the Bank of Augusta *vs.* Earle came before the court, that a corporation is not a citizen within the meaning of the Constitution of the United States. \* \* \* The averments in the declaration, said the judge, would seem to imply that the plaintiffs claim to have been created a corporate body, and to have been endued with the capacities and faculties it possesses by the co-operating legislation of the two States, and to be one and the same legal being in both States. If this were the case it would not affect the question of jurisdiction in this suit. But such a corporation can have no legal existence upon the principles of the common law, or under the decision of this court in the case of the Bank of Augusta *vs.* Earle, before referred to.

Under the Constitution it is perfectly competent for Congress to deny the use of the mails to this or any other corporation. Unlike individuals corporations possess no natural rights, and only such legal rights as the law-making power may see proper to confer upon them. It invokes in this case the authority of law to compel an officer of the United States to deliver its mail matter under a law which declares that letters con-

cerning its business shall not be carried in the mails. Its charter not authorize it to transact other than lottery business. If the company seeks to get possession of do not relate to that business it has no interest in them; if they do relate to that business their delivery is unlawful. It must confine itself strictly to the purpose of its organization. Whatever it does "concerns" a lottery. If it sends a letter it is a letter "concerning" a lottery. If it receives a letter, it is a letter "concerning" a lottery. The very addresses on the back of the letters it now seeks to recover "concern" a lottery.

If the letters do not "concern" a lottery, then the lottery company ought not so seriously to concern itself about the letters. If the letters do not relate to its business as a lottery company, then the company is putting itself to, an extraordinary amount of labor and expense to accomplish a purpose in which it has no interest.

It must not be forgotten in this connection that we are discussing the rights of the corporation as such. The individual members of the company have no rights in common with other citizens. They enjoy the same political rights; they may send or receive letters on any subject on which they choose to write. It is the soulless concern known as the Commonwealth Distribution Company of Kentucky whose supposed rights we are discussing, a corporation whose only recognition by the laws of the United States is found in a statute that excludes its letters and its literature from the mails. Its only legitimate business consists in a species of gambling, the most insidious and, therefore, the most dangerous and demoralizing known to the experience of mankind. Denied long ago by the laws of England as a nuisance, denied the use of the mails by the law of the land, and its very existence made a criminal offense by the laws of all the States except two or three, it resorts to a remarkable degree of forensic temerity to claim for it the same use of the mails as that possessed by an incorporated institution of learning.

It is insisted, however, that the act of Congress must be literally construed. That if Congress had intended to prohibit the transmission of letters "directed" to lottery companies it would have said so. The interdiction extends only to letters whose contents relate to or "concern" a lottery. A moment's consideration will, I think, demonstrate the correctness of this construction of the act. Let us see.

A letter addressed from A to B setting forth the character of the Commonwealth Distribution Company of Kentucky, showing that an investment of a few dollars in the tickets of that institution would enable the investor to win a fortune without the labor and waiting incident to the old way of money making, would be a letter "concerning" a lottery, and yet I apprehend that no one will be found to insist that such a letter is within the interdiction of the statute, provided that neither the sender nor the correspondent is in any way concerned as agent or otherwise in promoting the interest of the company. A circular setting forth the principles and ideas of the immensely corrupting influence of this worst of all species of modern gambling would be literally a circular "concerning" a lottery, and yet the proposition that such a circular would be unmailable would be treated as simply absurd.

What does the act of Congress mean? What was its enactment designed to accomplish? It meant simply to strike down lottery companies by breaking up all postal communications between the companies and their agents, and their victims. In order to effect this purpose it used the very strongest and most comprehensive term it could command.

This, like all other statutes, must be construed with reference to the law as it existed at the date of its enactment, and as it was

to remain unaffected by the statute in question, and, second, to the intent of Congress. And in the third place, every act of Congress must receive, if possible, a construction that will render it operative in carrying out the intention of Congress, rather than a construction which renders it void and of no effect. Taking these rules as a guide, we submit, first, that under the law as it existed at the time this statute was passed, no post-office official or other officer of the government was authorized to open a letter with a view to ascertain its contents. It is reasonably fair, then, to conclude that Congress contemplated some other mode of determining whether a letter "concerned" a lottery. Nor is it perceived that there is any other means by which the postmaster whose duty it is claimed is to forward or deliver the letter is enabled to acquaint himself with its contents, except from the address upon the letter. The writer of the letter is unknown. The lottery company declines to disclose the contents of the letter or the name of the writer. As to the second proposition, we have already shown that the object sought to be attained by Congress was the suppression of lottery business so far as that object could be accomplished by denying to companies carrying on that business the right to use the mails.

We are, therefore, driven as a last resort to conclude either that the order of the Postmaster-General directing postmasters to refuse to forward or deliver letters addressed to lottery companies is authorized by law, or that the statute under consideration is a dead letter, a legislative abortion.

Are we driven to the latter alternative by the necessities of this case? Let us see if we are not warranted in assuming for administrative purposes that every letter arriving at this post-office addressed to this company concerns the business of the company, and is therefore unmailable. This company has in every leading newspaper in the United States advertised its business. The only business it proposes to do, the only business it is authorized to do, is a business concerning which the law declares "no letter or circular shall be carried in the mails." It invites the people everywhere to violate this law. It offers a bribe to any one who will disregard the law. It offers a premium for crime and promises the largest premium to the worst criminal. It carefully lays its snare and delusively spreads its fatal net, and then with the song of the siren it allures the thoughtless and tempts the avaricious.

In response to its seductive allurements, thousands of letters come pouring like a flood into the post-office. Now, if the court please, it is not seriously questioned that nine-tenths of these letters concern the lottery, and have been sent in violation of law; for it is idle to say that, of all the world, the postmaster is the only person supposed to be ignorant of the contents of these letters. Gentlemen may ridicule the proposition that the postmaster is authorized to *presume* that these letters relate to the business of the lottery company. It is something more than presumption with him. He knows that the most of them relate to that business, and are, therefore, unmailable. This is a fact known to the postmaster, known to the parties, known to the court, and known to the world. Indeed, the plaintiff in this action does not dare to question it. "But," say the company, "while it is admitted that a portion of this mail, perhaps the larger portion, concerns our lottery, we possibly, and very probably, have other letters that do not concern the lottery, and those you dare not detain." We reply, unhesitatingly: "In the first place, if there are letters here that are simply addressed to you that do not in any manner concern your business, you have no interest in them and, therefore, no right to demand them. If you were a citizen of the United

States it would be otherwise; you would then have a right to and transmit letters on any subject not prohibited by law, and will not presume that your letters relate to prohibited matter; are a corporation, and the only business you are authorized to is one concerning which the law declares no letters shall be sent by mails. The necessary presumption or conclusion arising from the address of this letter makes it unmailable."

But, suppose, if the court please, that I am mistaken as to mail matter, and that an address on a letter to a lottery company makes it unmailable, and that, on the contrary, such company is entitled to use the mails for other purposes, then I say it becomes the duty of the company to separate its mailable from its unmailable matter.

By the law, both of this country and England, the person who mixes the property of another has fraudulently mixed with his own, has the right of possession of the whole mass, for the purpose of separating and identifying, or of disposing of the portion belonging to himself, and where separation and identification cannot be made, the law gives the property to him whose goods have been fraudulently mingled. The party guilty of the fraud to distinguish his own goods satisfied or lose it. The court will not identify his property for him. (Bills of Frauds, pages 97 and 98 and notes.)

Where one person adds mill-logs of his own to a pile of logs belonging to another person, and marks them in the same manner as the others, and they are already marked, he cannot afterwards maintain replevin against the other person for his proportion of the logs, but only for such logs as he can identify to be his own (*Dillingham v. Smith*, 30 Me., 370; *Compare Haseltine v. Stockwell* (30 Me., 237); *Bryant v. Ware* (30 Me., 295); *Foster v. Cushing* (35 Me., 60); *Stephenson v. Little* (1 Me., 433); *Wilson v. Wentworth* (25 N. H., 5 Fost., 245); *Jenkins v. Root* (19 Wis., 126); *Root v. Bonnema* (22 W., 539). "The rule is that if the confusion of goods is produced by the wrongful act of the owners, he loses his right to the whole, and even his credit is not attach his interest or share." (*Beach v. Schneally*, 20 L. R. 377; *Breckenridge v. Holland*, 2 Blaskyt, Ind., 377; *Leary v. Dean* (N. H., 351; 39 W., 557; 2 John. Ch., 62; 4 Bos., 155.)

In the case of *The Distilled Spirits*, 11 Wal., 356, the Supreme Court, in pronouncing the opinion, use this language: "It needs no examination of the doctrine of confusion or mixture of goods to show that it is apparent that if certain spirits belonging to the government by law are voluntarily mixed with other spirits belonging to the same government, and passed through the process of rectification in leaches, he cannot deprive the government of its property; and if the government claims its fair proportion of the rectified spirits, he certainly cannot complain of injustice. The only result of applying the doctrine of confusion of goods would be to forfeit the entire mixture."

Is the right of this company to such of its letters as do not relate to a lottery, supposing there are such (although no such allegation is made in the petition), of any higher character than that of the farmer's wheat which he has fraudulently mingled with his neighbor's? The farmer, knowing that his wheat is of an unmerchantable grade, fraudulently mingles it with a better grade belonging to his neighbor. The law, therefore, tells him he must lose his wheat. The lottery company fraudulently procures his mailable and unmailable matter, to be mingled as to render its separation impracticable. Now why should the lottery be more highly favored than the farmer? "The law will not sanction the fraud of a corporation sooner than that of an individual." (Notes on corporations, sec. 284, p. 280.)



The proportion that the lottery business has assumed within the last few years, invokes the serious consideration of the court and the country. Take, for example, the State of New York, where the organization of lottery companies or even the sale of lottery tickets is prohibited by statute. There are to-day in the city of New York alone 33 lottery agencies, receiving weekly, on an average, 7,661 ordinary, and 1,993 registered letters. Millions of dollars are flowing annually into their coffers. They are huge financial vampires sucking the life-blood of legitimate business enterprises, inflicting upon society a species of distempered mental leprosy, which will require years to remove. This gigantic work of undermining the best interests of society is being accomplished by a monster that seeks to hide behind the mask of a State charter a visage more hideous than that of the veiled prophet.

Finally, it is insisted for the company that it has a vested interest in letters arriving at this office to its address, and that the action of the department in withholding them amounts to confiscation, and that, too, without due process of law. This argument, however, if good for any purpose, is based upon the assumption that the letters in controversy do not concern the lottery, and are therefore legitimate mail matter. It is only in case of matter entitled by law to be sent through the mails that the party addressed can acquire any interest in it by reason of its having been sent through the mails or deposited for that purpose. The postal authorities are not only not authorized to transmit these letters, but are positively prohibited from so doing, and the deposit in the post-office of these letters is forbidden, and in the absence of any statute on the subject, it would seem, on equitable principles, that the company cannot take advantage of its own wrong, and insist upon setting up a right acquired in violation of law.

The law not only declares that lottery letters shall not be carried in the mails, but denounces a penalty against any person who shall knowingly deposit or send anything to be conveyed by mail in violation of this section. In the transmission of legitimate mail matter, the government is the agent of both parties—the agent of the writer until the matter leaves the office of mailing, and thereafter the agent of the person addressed, except in extraordinary cases, when, for sufficient reasons shown by the writer, the Postmaster-General is authorized to stop the matter *in transitu*. But in the case of unmailable matter the government does not become the agent of either party, except as provided in section 3898 of the Revised Statutes, already referred to, which is as follows:

All letters, packets, or other matter which may be seized or detained for violation of law shall be returned to the owner or sender of the same, or otherwise disposed of, as the Postmaster-General may direct.

Under this statute, the writers of the letters in controversy have never parted with their property in them, so far as the lottery company is concerned, and are entitled by law to have them returned. It is no answer to say that the writers are not insisting on their rights; the law declares that the letters shall be returned or otherwise disposed of, as the Postmaster-General may direct, and does not consult their wishes in the premises. Having violated the law in sending them, they are not entitled to be heard to say what disposition the department may make of them. But whatever may be the equities of the writers, the disposition of these letters does not in any manner affect the rights of the company, for they have acquired no rights by the violation of the law.

If the government, in its efforts to protect the citizens against the immoral tendencies and ruinous results of lottery speculations, should return to him his property, which he had sought to part with in violation

of law, it does not rest with the company to complain. In the States money lost at gaming may be recovered in an action against a winner. In this particular the complainant's charter may afford a remedy against the liability of the ordinary gambler, yet it is to require the government to transmit its stakes or to expose (although, like charity, covering a multitude of sins) to the iniquity of its transactions.

## REPORT OF THE AUDITOR OF THE POST-OFFICE DEPARTMENT.

### OFFICE OF THE AUDITOR OF THE TREASURY FOR THE POST-OFFICE DEPARTMENT. *October 3*

SIR: I have the honor to submit the following annual report of receipts and expenditures of the Post-Office Department, together with the operations of this office in connection therewith, for the year ended June 30, 1879.

#### COLLECTION OF POST-OFFICE REVENUES.

The number of post-offices in operation during the year was 10,000, which are classified, under the regulations adopted for the government of the department, chapter 2, section 76, as follows: Special offices, depositary and draft offices, and collection offices.

The following-named offices are denominated depositories of money, and are required by the Postmaster-General to receive and disburse the subject to the drafts of the department, the funds of certain offices as well as the revenues of their own, viz:

Adrian, Mich., J. H. Fee.  
Albany, N. Y., W. H. Craig.  
Albia, Iowa, V. Mendell.  
Atlanta, Ga., Benjamin Conley.  
Auburn, N. Y., N. P. Clark.  
Augusta, Me., H. H. Hamlin.  
Austin, Tex., H. B. Kinney.  
Bangor, Me., A. B. Farnham.  
Batavia, N. Y., William Tyrrell.  
Bay City, Mich., F. W. Dunham.  
Binghamton, N. Y., E. B. Stephens.  
Burlington, Vt., B. J. Derby.  
Charleston, Ill., G. M. Mitchell.  
Charleston, S. C., B. A. Boseman.  
Cleveland, Ohio, N. B. Sherwin.  
Columbus, Ohio, A. D. Rodgers.  
Concord, N. H., J. E. Larkin.  
Decorah, Iowa, A. K. Bailey.  
Denver, Colo., W. N. Byers.  
Des Moines, Iowa, J. S. Clarkson.  
Detroit, Mich., G. C. Codd.  
Dubuque, Iowa, G. L. Torbert.  
East Saginaw, Mich., T. Saylor.  
Elmira, N. Y., D. F. Pickering.  
Evansville, Ind., F. M. Thayer.  
Fort Dodge, Iowa, N. M. Page.  
Fort Wayne, Ind., F. W. Keil.  
Grand Rapids, Mich., J. Gallup.  
Harrisburg, Pa., M. W. McAlarney.  
Hartford, Conn., J. H. Burnham.  
Houghton, Mich., F. A. Douglass.  
Houston, Tex., J. Richardson.  
Huntsville, Ala., J. D. Sibley.  
Indianapolis, Ind., W. R. Holloway.

Iowa City, Iowa, Benjamin Owens.  
Jacksonville, Fla., H. Jay.  
Jamestown, N. Y., A. M. Clark.  
Kalamazoo, Mich., L. B. Kendra.  
Keene, N. H., A. Smith.  
Keokuk, Iowa, S. M. Clark.  
Knoxville, Tenn., William Ruhl.  
Lansing, Mich., S. D. Bingham.  
Leavenworth, Kans., D. R. Ant.  
Lexington, Ky., H. K. Milward.  
Lima, Ohio, George P. Waldorf.  
Louisville, Ky., V. C. Thompson.  
Madison, Wis., E. W. Keyes.  
Malone, N. Y., J. J. Seaver.  
Marquette, Mich., S. M. Billing.  
Marshalltown, Iowa, E. Schurtz.  
Meadville, Pa., J. F. Morris.  
Memphis, Tenn., A. D. H. Thom.  
Milwaukee, Wis., H. C. Payne.  
Mobile, Ala., M. D. Wickersham.  
Montgomery, Ala., I. W. Robert.  
Montpelier, Vt., J. W. Clark.  
Mount Pleasant, Iowa, G. W. M.  
Nashville, Tenn., W. P. Jones.  
Newark, N. J., W. Ward.  
New Bedford, Mass., T. Coggeshall.  
New Haven, Conn., N. D. Sperry.  
Norwich, N. Y., J. K. Spaulding.  
Ogdensburg, N. Y., R. G. Pettibone.  
Olean, N. Y., M. B. Fobes.  
Omaha, Nebr., T. F. Hall.  
Peoria, Ill., J. S. Stevens.  
Pittsburgh, Pa., G. H. Anderson.  
Plattsburgh, N. Y., H. S. Ransom.

Portland, Me., C. W. Goddard.	Springfield, Mass., H. C. Lee.
Portsmouth, N. H., E. G. Pierce, jr.	Steuenville, Ohio, F. O'Neal.
Portsmouth, Ohio, F. C. Gibbs.	Syracuse, N. Y., A. C. Chace.
Providence, R. I., C. R. Brayton.	Taunton, Mass., E. E. Fuller.
Raleigh, N. C., W. W. Holden.	Terre Haute, Ind., N. Filbeck.
Richmond, Va., Wm. W. Forbes.	Towanda, Pa., P. Powell.
Rochester, N. Y., D. T. Hunt.	Urbana, Ohio, W. A. Brand.
Rutland, Vt., A. H. Tuttle.	Utica, N. Y., C. H. Hopkins.
Saint Albans, Vt., B. D. Hopkins.	Watertown, N. Y., W. G. Williams.
Saint Johnsbury, Vt., C. P. Carpenter, (2d).	Wellsborough, Pa., G. W. Merrick.
Saint Paul, Minn., David Day.	Wheeling, W. Va., Hugh Sterling.
Sandusky, Ohio, J. M. Boalt.	Williamsport, Pa., R. Hawley.
Savannah, Ga., L. McLaws.	Winona, Minn., D. Sinclair.
Scranton, Pa., J. A. Scranton.	Wooster, Ohio, P. C. Given.
Springfield, Ill., D. L. Phillips.	Worcester, Mass., J. Pickett.
	Zanesville, Ohio, W. S. Harlan.

The following officers receive and retain, subject to the warrants of the Post-Office Department, the funds of such post-offices as are instructed to deposit in their hands, viz :

The Treasurer of the United States at Washington, D. C.

The assistant treasurers of the United States at

New York, N. Y.	Cincinnati, Ohio.	Boston, Mass.
Baltimore, Md.	Saint Louis, Mo.	Chicago, Ill.
New Orleans, La.	Philadelphia, Pa.	San Francisco, Cal.

Ninety-nine post-offices are draft-offices, and during the year paid 23,350 drafts, issued by the Postmaster-General, countersigned, entered, and sent out by the Auditor, for sums in the aggregate of.....	\$2,317,247 33
Nine thousand one hundred and four are deposit-offices, a portion of which during the year deposited with the Treasurer and assistant treasurers of the United States the sum of.....	5,119,524 96
Thirty thousand four hundred and sixty-three offices are collection-offices and paid on collection-orders issued to mail-contractors the sum of.....	5,080,414 36
One thousand two hundred and forty-six are special offices, and derive their mail supplies by the payment of the revenue of their offices therefor, amounting to.....	36,222 89
Four thousand six hundred and sixty post-offices are supplied by mail-messengers, for which service there was paid during the year.....	660,476 97

#### REVENUE ACCOUNT OF THE POST-OFFICE DEPARTMENT.

The revenue of the department for the fiscal year ended June 30, 1879, was .....	\$30,041,982 86
The amounts placed in the Treasury for the service of the department for the fiscal year, being grants in aid of the revenue under the following acts of Congress, were—	
Under the second section of the act approved June 17, 1878, for supplying deficiencies in the revenues of the Post-Office Department for the fiscal year ended June 30, 1879 .....	\$3,000,000 00
Under the act approved June 28, 1879, an additional sum for the payment of letter-carriers for the fiscal year ended June 30, 1879 .....	71,000 00
	<hr/> 3,071,000 00
Aggregate of revenue and grants.....	33,112,982 86
The expenditures of the department for the fiscal year ended June 30, 1879, were .....	33,073,437 82
	<hr/> 39,545 04
Excess of receipts .....	
Amount charged to "bad debts" and "compromise" accounts.....	9,771 53
Deduct amount credited to "suspense" account.....	1,755 13
	<hr/> 8,016 41
The balance available to meet accrued liabilities for the fiscal year 1879, is .....	31,528 63

At the commencement of the fiscal year 1879 there was a balance available for accrued liabilities, under appropriation for 1878, of..... \$11  
Additional amounts have been placed in the Treasury on account of 1878, as follows:

Under the act approved June 19, 1878 (private No. 205),  
for the relief of H. G. Boardman, postmaster at Mil-  
ton, Vermont ..... \$116 34

Under the act approved March 3, 1879, to supply a de-  
ficiency in the appropriation for transportation on  
railroads for the fiscal year 1878 ..... 166,392 27

Total for 1878 ..... 3  
During the last fiscal year there has been paid on account of 1878..... 1

Balance available for 1878 ..... 1

At the commencement of the fiscal year 1879 there remained on hand a  
balance unexpended for 1877 of..... 2  
During the year there has been paid on account of 1877..... 1

Balance to be covered into the Treasury ..... 1

The following amounts were placed in the Treasury for the p-  
of certain audited claims for services rendered during 1876 and  
years:

Under act approved March 3, 1879 (deficiency)..... \$45,873 31  
Under act approved March 3, 1879 (sundry civil) for relief of  
George H. Giddings..... 14,583 33

There has been paid under said acts..... \$

Balance available for claims appropriated for.....

#### SUMMARY OF REVENUES AND EXPENDITURES.

Revenue for 1879 ..... \$30,0  
Grants from the Treasury for 1879..... \$3,071,000 00  
Grants from the Treasury for 1878..... 166,508 61  
Grants from the Treasury for 1876 and prior years.. 60,456 64

Total receipts. .... 33,3  
Expenditures for 1879 ..... \$33,073,437 82  
Expenditures for 1878 ..... 143,018 72  
Expenditures for 1877 ..... 173,132 71  
Expenditures for 1876 and previous years..... 60,310 20

Total expenditures ..... 33,4

Net amount charged to bad debt and compromise accounts during  
1879 ..... 1

Excess of expenditures ..... 1

The balance standing to the credit of the general rev-  
enue account at the close of the fiscal year ended  
June 30, 1878, as per last report, was..... \$3,246,056 14  
Deduct excess of expenditures during the year 1879. 117,967 75

Leaving to the credit of the revenue account at close of fiscal year  
ended June 30, 1879 ..... 3,1  
Due by late postmasters, accounts in suit ..... \$245,694 47  
accounts not in suit..... 233,037 01

Due late postmasters on accounts not closed ..... 2,6

2,6



## DEFICIENCY APPROPRIATIONS.

The amount appropriated to supply deficiencies in the revenues for the fiscal year ended June 30, 1879, was:

General deficiency .....	\$4,222,274 72
Deficiency in letter-carriers' appropriation .....	71,000 00
Deficiency in railroad transportation .....	450,000 00
	<u>\$4,743,274 72</u>

The amount placed with the Treasurer of the United States to the credit of the Post-Office Department during the fiscal year, being "grants from the Treasury," was .....	3,071,000 00
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The amount remaining to the credit of the deficiency appropriations, subject to requisition as deficiencies for 1879 appear, is .....	1,672,274 72
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The net revenues of the department from postages, being the aggregate of balances due the United States by postmasters on the adjustment of their quarterly accounts for the year, after deducting their compensation and the expenses of their offices, was:

For the quarter ended September 30, 1878 .....	\$4,126,634 24
For the quarter ended December 31, 1878 .....	4,067,954 39
For the quarter ended March 31, 1879 .....	4,956,945 08
For the quarter ended June 30, 1879 .....	4,532,632 84
Total .....	<u>18,274,166 55</u>

The amount of letter postages paid in money was:

For the quarter ended September 30, 1878 .....	\$56,898 42
For the quarter ended December 31, 1878 .....	53,571 14
For the quarter ended March 31, 1879 .....	75,710 61
For the quarter ended June 30, 1879 .....	68,721 24
Total .....	<u>254,901 41</u>

The amount of stamps, stamped envelopes and wrappers, newspaper and periodical stamps, and postal cards sold was:

For the quarter ended September 30, 1878 .....	\$6,642,842 02
For the quarter ended December 31, 1878 .....	6,961,539 49
For the quarter ended March 31, 1879 .....	7,500,809 29
For the quarter ended June 30, 1879 .....	7,039,884 19
Total .....	<u>28,145,074 99</u>

The amount of official stamps furnished the different departments and included in the above amount of stamps sold was:

For the Treasury Department .....	\$200,000 00
For the War Department .....	141,497 80
For the Navy Department .....	6,950 00
For the Interior Department .....	35,999 80
For the Department of Justice .....	3,620 00
For the Department of Agriculture .....	40 00
Total .....	<u>388,107 60</u>

The number of quarterly returns of postmasters received and audited, on which the sum of \$18,274,166.55 was found due the United States was:

For the quarter ended September 30, 1878 .....	\$38,365
For the quarter ended December 31, 1878 .....	39,605
For the quarter ended March 31, 1879 .....	40,313
For the quarter ended June 30, 1879 .....	40,369
Total .....	<u>158,552</u>

## MAIL TRANSPORTATION.

The amount charged to transportation accrued and placed credit of mail contractors and others for mail transportation during fiscal year was:

For the regular supply of mail-routes .....	\$16, 11
For the supply of "special" and mail-messenger offices .....	60
For the salaries of postal railway clerks, route and other agents .....	2, 00
For the salaries and per diem of the assistant superintendents of the postal railway service .....	3
Total .....	19, 51

## Foreign mail transportation:

New York, Great Britain and Ireland .....	\$126, 019 15
New York, Great Britain and Germany .....	44, 812 22
New York, San Francisco, West Indies, Central and South America .....	33, 705 48
New York and Newfoundland .....	15 85
Boston, Great Britain and Ireland .....	1, 194 42
Boston and Nova Scotia .....	148 21
Boston and West Indies .....	12 22
Philadelphia and England .....	1, 531 09
Philadelphia and West Indies .....	1 27
Baltimore and Bremen .....	13 68
New Orleans, West Indies, Mexico, and Honduras .....	233 41
San Francisco, Central and South America, China, Japan, Farther India, Australia, and South Sea Islands .....	15, 060 45
Post-Office Department of Canada—English mails .....	803 50
Upper Pacific coast-local mails .....	132 52
Expenses of government mail-agent at Panama .....	1, 446 00
Expenses of government mail-agent at Aspinwall .....	940 00
	95

The amount credited to transportation accrued and charged to contractors for overcredits for "fines and deductions" was .....

Net amount to the credit of mail contractors .....	19, 57
The amount paid during the year was .....	19, 15
Excess of transportation accrued .....	37

The following balances, accrued for transportation of the mail by railroads, have been certified to the Secretary of the Treasury and carried to the credit of the companies named, under the act of March 3, 1879, and instructions contained in the Secretary's letter of March 10, 1879. The amounts are *not* included in the total of "railroad transportation paid" (see Statutes, vol. 20, page 420).

Union Pacific Railroad Company, first and second quarters 1879 .....	\$188, 367 28	
Central Pacific Railroad Company, first and second quarters 1879 .....	170, 909 75	Previous years..
Kansas Pacific Railroad Company, first and second quarters 1879 .....	43, 126 93	Previous years..
Sioux City and Pacific Railroad Company, first and second quarters 1879 .....	4, 098 36	
Total .....	406, 502 33	30

## STATEMENT OF COLLECTING DIVISION.

Balance due United States brought forward from last report .....	\$498,563 92
Balance due United States on account of postmasters becoming late during the fiscal year.....	321,073 49
	<hr/> 819,637 41
Amount collected during the year.....	\$329,379 28
Amount credited to "suspense".....	1,755 12
Amount charged to bad and compromise debts .....	9,771 53
	<hr/> 340,905 93
Balance remaining due United States .....	478,731 48
Of which there is in suit.....	245,694 47
Not in suit.....	233,037 01
	<hr/> 478,731 48
Balance due late postmasters brought forward from last report.....	47,292 21
Amount becoming due during the fiscal year .....	32,722 77
	<hr/> 80,014 98
Amount paid during the year .....	33,764 28
	<hr/> 46,250 70
Amount in suit June 30, 1878 .....	255,442 45
Amount submitted for suit during the fiscal year.....	12,865 45
	<hr/> 268,307 90
Of which there was collected during the year.....	16 261 69
Amount otherwise settled.....	6,351 74
	<hr/> 22,613 43
Balance remaining in suit .....	245,694 47
Amount collected from late postmasters on account of interest and costs .	3,310 02

## ACCUMULATION OF VALUELESS FILES.

I have the honor to call your attention to the vast accumulation of accounts current, money-order statements, paid money-orders, and other papers in the files of this office, to which reference is never had, and which are occupying rooms very much needed for the current files.

I suggest that Congress be requested to grant to the Postmaster-General authority to destroy or sell as waste paper all returns, statements, and paid money-orders pertaining to the accounts of postmasters which have been finally settled and closed, and which have been in the files not less than ten years. The ledgers and registers of this office will show the accounts as audited, and all necessary information can be obtained from them, the papers above mentioned being the postmasters' returns to this office on which their accounts were audited and settled.

The accompanying tables, numbered from 1 to 31, inclusive, exhibit in detail the transactions of the department for the fiscal year.

I have the honor to be, very respectfully,

J. M. MCGREW,  
Auditor.

Hon. D. M. KEY,  
Postmaster-General.

## Statement of the postal receipts and expendi-

States and Territories.	Letter-postage.	Waste paper and twine.	Box rents and branch offices.	Postage stamps, stamped envelopes and postal cards.
Maine.....	\$1,478 43	880 33	\$24,548 68	\$451,372 36
New Hampshire.....	537 42	117 58	15,483 70	275,352 85
Vermont.....	472 60	92 74	11,221 83	251,063 44
Massachusetts.....	10,762 98	1,250 00	112,837 25	1,962,377 98
Rhode Island.....	917 80	97 15	19,780 54	202,552 14
Connecticut.....	3,043 40	175 22	41,422 07	578,005 20
New York.....	66,721 89	3,340 33	175,070 42	5,465,178 11
New Jersey.....	2,016 44	164 97	25,125 00	591,200 61
Pennsylvania.....	18,729 41	1,256 31	92,497 21	2,620,110 06
Delaware.....	205 84	15 00	1,537 11	72,304 02
Maryland.....	5,248 34	96 98	10,354 04	524,488 77
Virginia.....	2,352 02	57 38	11,727 46	435,468 67
West Virginia.....	862 05	80 49	3,894 84	149,059 04
North Carolina.....	946 98	39 02	8,061 04	211,212 89
South Carolina.....	586 98	19 41	6,494 04	174,679 84
Georgia.....	1,841 36	240 10	17,754 02	333,262 53
Florida.....	647 80	12 24	5,135 74	83,032 80
Ohio.....	7,975 70	1,137 38	81,817 00	1,885,509 69
Michigan.....	5,257 82	574 30	64,582 41	984,072 50
Indiana.....	3,037 02	425 04	46,270 44	778,999 25
Illinois.....	22,522 07	2,130 04	105,726 72	2,268,248 30
Wisconsin.....	3,205 11	304 19	40,731 06	686,139 40
Iowa.....	3,875 58	326 74	68,939 59	869,213 98
Missouri.....	9,917 30	697 30	32,441 23	1,081,499 09
Kentucky.....	2,740 16	183 25	16,759 48	432,079 56
Tennessee.....	2,068 37	117 70	10,623 41	315,894 88
Alabama.....	1,274 24	41 49	11,620 96	224,570 16
Mississippi.....	716 21	37 00	12,583 35	162,207 17
Arkansas.....	460 65	38 27	9,678 75	144,504 98
Louisiana.....	2,934 57	56 15	18,611 05	268,117 69
Texas.....	3,963 50	168 58	43,604 38	458,939 13
California.....	7,170 68	220 70	66,686 98	800,151 54
Oregon.....	293 53	48 06	11,610 29	112,770 76
Minnesota.....	4,280 99	152 07	20,864 60	414,861 63
Kansas.....	1,539 76	184 59	32,316 40	470,172 68
Nebraska.....	1,367 27	60 63	15,268 02	237,442 06
Nevada.....	885 16	21 09	13,812 26	80,763 45
Colorado.....	955 93	149 00	28,346 06	192,673 62
Utah.....	317 34	41 48	5,778 51	74,550 66
New Mexico.....	19 14	9 80	1,501 73	10,366 34
Washington.....	78 59	4 17	3,137 12	39,209 37
Dakota.....	267 36	13 46	6,247 52	74,735 99
Arizona.....	89 06	41 54	1,993 40	21,204 00
Idaho.....	33 89	16 17	1,996 98	22,760 31
Wyoming.....	73 20	3 14	2,934 35	27,192 70
Montana.....	54 08	18 30	6,104 48	37,982 43
Alaska.....	06			53 43
District of Columbia.....	3,870 57	260 46	5,054 74	183,510 10
Deduct miscellaneous items.....	208,648 15	14,636 01	1,380,803 84	27,758,812 04
Add miscellaneous items.....	46,253 26		358 67	380,262 05
	254,901 41	14,636 01	1,381,162 51	28,143,074 09

NOTE.—The following items of expenditure and revenue, being of a general nature, are not included in the foregoing statement:

Amount paid for foreign mails and expenses of government agent.....

Balances due foreign countries.....

Ship, steamboat, and way letters.....

Wrapping paper.....

Twine.....

Post-route maps.....

Advertising.....

Mail-bags and catchers.....

Salary per diem of assistant superintendents of the postal-railway service.....

Mail locks and keys.....

Postmarking and canceling stamps.....

Mail depredations and special agents.....

Letter-balances.....

Expenses of postage-stamps, stamped envelopes, and postal cards.....

Dead letters, official and registered package envelopes.....

Miscellaneous and sundry payments.....

Excess of expenditures brought down.....



Amount transferred to postage fund .....	\$663,820 93
Amount deposited at first-class offices.....	74,785,472 98
Amount paid for incidental expenses.....	63,399 44
Amount paid for commissions and clerk-hire .....	550,655 85
Miscellaneous items .....	7,196 66
Balance in hands of postmasters June 30, 1879....	1,233,036 49
<b>Total .....</b>	<b>\$166,760,029 45</b>

J. M. MCGREW, Auditor.

OFFICE OF THE AUDITOR OF THE TREASURY  
FOR THE POST-OFFICE DEPARTMENT,  
Washington, D. C., October 30, 1879.

*Statement showing the revenue which accrued on domestic money-order transactions for the fiscal year ended June 30, 1879.*

Amount of fees received on orders issued .....	\$798,625 65
Amount received for premiums, &c.....	721 44
	<b>799,347 09</b>

Amount paid for commissions and clerk-hire.....	\$512,550 52
Amount paid for expenses, viz: Salary and ex- penses of—	
Special agents.....	\$19,487 47
Lost remittances .....	4,364 50
Bad debts.....	26,524 54
Incidental expenses .....	12,459 29
	<b>62,835 80</b>
Net revenue.....	<b>223,960 77</b>
	<b>799,347 09</b>

J. M. MCGREW, Auditor.

OFFICE OF THE AUDITOR OF THE TREASURY  
FOR THE POST-OFFICE DEPARTMENT,  
Washington, D. C., October 30, 1879.

*Weight of letters and newspapers, &c., sent from the United States to European countries during the fiscal year ended June 30, 1879.*

Countries.	Letters.	Newspapers, &c.
	<i>Grams.</i>	<i>Grams.</i>
United Kingdom of Great Britain and Ireland.....	40,343,309	212,327,673
Germany.....	26,653,520	98,897,730
France.....	9,111,895	39,899,167
Italy.....	2,792,372	15,526,020
Belgium.....	966,952	3,875,226
Denmark.....	1,152,135	3,125,491
Netherlands.....	1,326,338	4,601,033
Switzerland.....	2,031,414	9,742,666
Spain.....	750,887	4,678,317
Sweden.....	2,277,275	6,571,653
Norway.....	2,048,090	4,026,742
<b>Total .....</b>	<b>95,364,187</b>	<b>403,213,157</b>
<b>Increase, compared with last fiscal year.....</b>	<b>5,099,806</b>	<b>16,742,571</b>

J. M. MCGREW, Auditor.

OFFICE OF THE AUDITOR OF THE TREASURY  
FOR THE POST-OFFICE DEPARTMENT, October 30, 1879.

*Statement showing the receipts and disbursements of the Money-Order Office of  
States during the fiscal year ended June 30, 1879.*

## RECEIPTS.

Balance in the hands of postmasters June 30, 1878.....		\$1.
Amount received for domestic money-orders issued.....	\$88,254,541 02	
Amount received for Canadian international money- orders issued.....	316,283 98	
Amount received for British international money- orders issued.....	894,859 25	
Amount received for German international money- orders issued.....	829,788 36	
Amount received for Swiss international money-orders issued.....	96,171 25	
Amount received for Italian international money- orders issued.....	103,352 11	
Total issued.....		90.
Amount received for fees on domestic money-orders issued.....	798,625 65	
Amount received for fees on Canadian international money-orders issued.....	7,217 80	
Amount received for fees on British international money-orders issued.....	27,753 00	
Amount received for fees on German international money-orders issued.....	22,927 00	
Amount received for fees on Swiss international money-orders issued.....	2,758 50	
Amount received for fees on Italian international money-orders issued.....	2,760 25	
Total fees.....		
Amount received for premiums, &c.....		65.
Amount received for deposits.....		8.
Amount received for drafts.....		
Amount transferred from postage fund.....		
Amount due postmasters.....		
Total.....		166.

## DISBURSEMENTS.

Amount of domestic money-orders paid.....	\$87,427,047 26	
Amount of Canadian international money-orders paid.....	339,072 45	
Amount of British international money- orders paid.....	345,761 09	
Amount of German international money- orders paid.....	639,542 68	
Amount of Swiss international money- orders paid.....	55,829 09	
Amount of Italian international money- orders paid.....	10,040 69	
Total paid.....	88,817,294 16	
Amount of domestic money-orders repaid.....	\$571,714 98	
Amount of Canadian international mo- ney-orders repaid.....	965 42	
Amount of British international money- orders repaid.....		
Amount of German international money- orders repaid.....	3,630 34	
Amount of Swiss international money- orders repaid.....	459 13	
Amount of Italian international money- orders repaid.....	140 00	
Total repaid.....	\$579,152 94	

Amount transferred to postage fund .....	\$663,820 93
Amount deposited at first-class offices.....	74,785,472 98
Amount paid for incidental expenses.....	63,399 44
Amount paid for commissions and clerk-hire .....	550,655 85
Miscellaneous items .....	7,196 66
Balance in hands of postmasters June 30, 1879.....	1,233,036 49

Total..... \$166,760,029 45

J. M. MCGREW, Auditor.

OFFICE OF THE AUDITOR OF THE TREASURY  
FOR THE POST-OFFICE DEPARTMENT,  
Washington, D. C., October 30, 1879.

*Statement showing the revenue which accrued on domestic money-order transactions for the fiscal year ended June 30, 1879.*

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Lost remittances .....	4,364 50
Bad debts.....	26,524 54
Incidental expenses .....	12,459 29

62,835 80

Net revenue..... 223,960 77

799,347 09

J. M. MCGREW, Auditor.

OFFICE OF THE AUDITOR OF THE TREASURY  
FOR THE POST-OFFICE DEPARTMENT,  
Washington, D. C., October 30, 1879.

*Weight of letters and newspapers, &c., sent from the United States to European countries during the fiscal year ended June 30, 1879.*

Countries.	Letters.	Newspapers, &c.
	<i>Grams.</i>	<i>Grams.</i>
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Italy.....	2,702,372	15,526,920
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Denmark.....	1,152,135	3,125,491
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Switzerland.....	2,631,414	9,742,600
Spain.....	750,687	4,678,317
Sweden.....	2,277,275	6,571,953
Norway.....	2,048,090	4,026,743
Total.....	95,364,187	<u>403,213,157</u>
Increase, compared with last fiscal year.....	5,009,800	<u>16,742,571</u>

J. M. MCGREW, Auditor.

OFFICE OF THE AUDITOR OF THE TREASURY  
FOR THE POST-OFFICE DEPARTMENT, October 30, 1879.

*Statement showing the receipts of money by postmasters during the fiscal years 1878, and the amount of losses by defalcation, etc., during the same period.*

OFFICE OF THE AUDITOR OF THE TREASURY  
FOR THE POST-OFFICE DEPARTMENT  
November 1

Statement showing the receipts of the Post-Office Department for two years ending June 30, 1878, and the amount of bad debts and suits during the same period. The number of post-offices during the two years was from thirty-nine thousand to forty-one thousand.

Receipts from ordinary revenues.....	\$56,8
Receipts from sale of money-orders .....	158,1

Total amount received by postmasters during the two years...	214,9
--	-------

Postal bad debts .....	
Postal compromise debts .....	
Money-order bad debts .....	

Total compromise and bad debts .....	
--------------------------------------	--

Postal accounts remaining in suit .....	
Money-order accounts remaining in suit .....	

Total in suit .....	
---------------------	--

More than one-half of the amount in suit will be finally collected, but, if the whole amount as uncollectible, the per cent. of loss is .0046+, or less than *twentieth of one per cent.*

J. M. MCGREW, Auditor of the Treasury.



REPORT  
OF  
THE COMMISSIONER OF AGRICULTURE,  
FOR THE YEAR 1879.

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SIR: I have the honor to transmit this my third annual preliminary report of the agricultural condition of the country and of the work in hand and accomplished by the department during the past year.

At this time I recall with satisfaction the encouragement you gave when I assumed the duties of Commissioner to the proposed attempt to stimulate the manufacture of sugar from any and every source, so that the production within the boundaries of our own country should at least equal the home consumption. Reporting progress as the result of the efforts of this department in this direction, it is not too much to say that the success attending the manufacture of cane-sugar from sorghum and maize will mark the year 1879 as an important epoch in the agricultural progress of our people.

With the knowledge that during the past summer and fall sugar of good quality has been profitably made from Texas to Northern Minnesota from the "Minnesota early amber" cane (the seed of which was widely distributed by the department;) that sirups weighing 12 pounds to the gallon, at least one-half of which was crystallizable cane-sugar, was made and can be again made in nearly every State in the Union by farmers with ordinary and inexpensive machinery at a cost of 16½ cents per gallon, and with the knowledge that by means of larger and better appointed mills, that need not cost to exceed \$10,000, sugar and sirup have been made the past season from sorghum by the car-load, which commanded the highest market price; it is not too much to assert, that, as a result of the work of this department, which has constantly before it the duty of accomplishing all that may be done to increase or multiply those products of the soil which constitute the wealth and sustain the manufactures and commerce of the country, a new industry has been fairly established, the importance and significance of which it is difficult to realize. With this and a knowledge of the work of the division of chemistry during the past season (a short statement of which will form part of this report), I am warranted in asserting that it has been finally and practically proved that one of the most important, expensive, and indispensable requisites of modern life can be profitably grown where heretofore it was supposed not possible to produce it; that it can be manufactured in quantities sufficient to meet any

demand likely to occur, at a remunerative rate even if the price should fall one-third below what it now is, and that the smallest farm as the largest planter can profitably engage in its production; and in no limited area of country, but in whatever place maize can be grown successfully; for there sorghum of some variety will grow, and will flourish and mature its juice and seed in much of our soil in which it is by no means a certain crop.

Several attempts to make sugar from beets in Illinois, Wisconsin, and California having been abandoned as unprofitable, and all attempts to make a merchantable sugar from sorghum having failed up to the present time, it became a settled opinion that only from tropical cane and maple could sugar be profitably made in the United States. The sugar groves found scattered along a narrow strip of our northern border are fast disappearing, and the amount of sugar, at any time since 1870, was in the census of 1870 reported at 28,443,645 pounds of molasses at 921,057 gallons.

It is now less, and is an inconsiderable factor in the problem of the manufacture of sugar from the tropical cane was confined to a narrow belt of country bordering the Gulf of Mexico, which produces an average of sugar averaging for twenty years past 1,600 pounds per acre; the total production of this strip last year was about 250,000,000 pounds, while our importation from abroad was 1,741,650,000 pounds of sugar, beside molasses, melado, and other forms of sucrose, and the total was 300,000,000 pounds increase over the importation of 1877-'78 (figures for 1877-'78).

The Department of Agriculture has done what was possible to encourage the production of sugar from the tropical cane as well as from beets and other plants, and there has been a large increase in the production of sugar from this source during the past ten years, but the increased demand has far outstripped the increased production.

The consumption of sugar per capita of our people is about 40 pounds per annum at present, and with cheap, pure, healthful home-made sugars the consumption per capita would increase to 60 or 80 pounds.

Fifty millions of people would consume at 60 pounds each, the same as said the English people consume, annually 3,000,000,000 pounds of sugar worth at 6 cents \$180,000,000, or at 10 cents, which is the price of the Crystal Lake sorghum sugars of Weidner & Co. were sold at, \$300,000,000.

In reflecting upon this sugar problem, some two years since it appeared to me that many years must pass before we could hope to have a supply of sugar from tropical canes grown on our own soil. The levees of the Mississippi River must be rebuilt, and the ruined plantations restored; the demoralized labor system of the South reconstituted, and the disheartened land-owners encouraged; the mechanical arts in part, divorced from the agricultural interest, and a co-operative system of labor and capital must be established with confidence restored, before any very great and permanent increased production of sugar

looked for from the cultivation of tropical cane. Then again the plant itself belonged to a tropical country, and refused to ripen its seed in Louisiana, never even maturing the whole extent of stalk grown.

All these considerations combined to make a discouraging outlook for the home production of sugar from tropical cane within a period of time which would afford any relief to the then depressed condition of our industries.

It was with much gratification, therefore, that I first saw a specimen of well granulated sugar made from sorghum, and exhibited at the Minnesota State Fair.

After a thorough examination of the attempts to produce sugar from sorghum in this country, and also after a chemical examination in the laboratory of the juice of this particular plant, it became apparent that this was a probable source of the immediate production of this much-desired article.

The first stalks of sorghum ever grown in this country, so far as I am informed, were planted by the Curator of the Botanical Gardens. This seed was obtained from Paris, as was also the seed which the Agricultural Department first distributed in the year 1856.

A more effective distribution, however, was made by the enterprising editor and proprietor of the American Agriculturist, Mr. Orange Judd, who sent out 25,000 packages of seed to the subscribers of his paper. In 1857 Mr. Leonard Wray came from England and brought with him sixteen varieties of African imphee or sorghum, which were planted in South Carolina and Georgia. Sorghum was thus introduced and was largely grown in almost every State in the Union. During the war of the rebellion it was particularly valuable to the people of the Southern States, and was the only adequate means of obtaining their "sweetening." Isolated attempts were made in Ohio and elsewhere to granulate the juice of the varieties then in cultivation, but without such success or profit as would warrant a continuation of the efforts. In no instance did the result seem to be satisfactory, and the raising of sorghum was nearly abandoned in Ohio, and in other States was only cultivated for the sirup. When the discovery was made that the juice of the "Early Amber" cane seemed to be more pure than of others, and would, with careful attention, deposit a large amount of its sucrose in granular form, the department determined to make so far as possible a thorough examination of the different varieties of sorghum and test their relative merits and value as sugar-producing plants. This inquiry has been patiently and carefully followed from the season of 1877 to 1879, and the results have been eminently satisfactory, as will appear in remarks upon the work of the Chemical Division. It is sufficient to say in this place that the value of the work done during the past year by this division can not be overestimated.

Mention had been made, and it had been recorded and mostly forgotten, that sugar was obtainable from corn, pumpkins, melons, and other vegetables, but no thorough, careful, persistent experiment seems ever to have

been made (if we except that of Mr. F. L. Stewart, who was for some years in the mountains of Pennsylvania at work for some years in this line, under discouraging circumstances), having in view the determination of the commercial value of these and other plants, until this task was referred to the Chemical Division of this department in 1878. In a letter from Miss Gail Adams to her husband, John Adams, September 24, 1777,

An instance may be seen in the progress which is made in grinding corn, boiling the liquor into molasses. Scarcely a town or parish within forty miles of Philadelphia but what has several mills at work; and had the experiment been made a number of many thousand barrels would have been made. No less than 80 have been made in the small town of Manchester. It answers very well to distill, and may be refined to sugar. There are two mills sitting up in this parish. They have three rollers with cogs and two smooth. The stalks are stripped of the leaves and tops, and is no robbery upon the cattle, and the juice ground out. 'Tis said four barrels will make one of molasses, but in this people differ widely. They have no machinery for refining it so that it looks as well as the best imported molasses.

The following is an extract from the work of David Lee Child, on the culture of the beet and manufacture of beet-sugar:

Other plants usually grown in our soil are capable of furnishing sugar, and they may be found worth cultivating for that and accessory products.

We have tried Indian-corn stalks and the pumpkin, and have obtained good sugar and molasses.

Perhaps these crops may alternate advantageously with the beet. The manufacture of sugar from the stalks of Indian corn can be reconciled, as we believe, with the maturity or near maturity of the ears, this source of saccharine matter, beside the beet-root. The seeds of the pumpkin yield a fine sweet oil, but no means of judging what quantity of this product can be obtained from a given quantity of land. If it should turn out satisfactorily in this respect, the pumpkin would overshadow the sugar-cane.

Here was the opportunity and it was at that time the duty of the government to assume the risk of failure and the expense and care of the scientific analyses and experimental trial as would have exhausted a fortune before giving up even the hope of securing success in the production of sugar, and thus retaining at home the millions of dollars which have since gone out to sustain and enrich other nations. The experiment which should have been done then has been undertaken now, with all the perfect means as were furnished; and notwithstanding the ridicule, the thoughtless, and the fears of hopeful friends, it has been steadily pushed forward to a satisfactory conclusion.

Many persons are preparing to imitate the example of F. A. Davis & Co., of Chicago, and erect mills the coming season with vacuum pans and centrifugal driers in which the work will be done by steam, of capacity sufficient to make a ton of sugar each day of twenty-four hours of work. Mills of this capacity will be needed in every county where sorghum is grown, and will not only be employed in the harvest, but in milling the stalks of sorghum and corn direct from the field. They will also after harvest and during the winter take the product of the open-pan mills (sirups weighing 8 to 12 pounds) and rework it in the vacuum pan and centrifugal, making sugar and sirup for the



## CHEMICAL DIVISION.

The work accomplished in the Chemical Division up to the 27th of May, 1879, was included in the annual report for 1878. From that date to the present time there have been made—

First. Ninety-one miscellaneous analyses, including soils, waters, fertilizers, clays, ores, marls, and other mineral substances.

Second. Thirty approximate analyses of various food and medicinal materials.

Third. Two hundred and seventy-four analyses of various sugar-yielding plants and their juices.

Fourth. Five experiments in alcoholic distillations from the refuse of sugar-manufacture, and twenty-eight experiments in making sugar from various sugar-yielding plants—in all thirty-three.

The experiments entered upon for the purpose of determining the amount of sugar in the juice of the several varieties of sorghum, of the stalks of maize and of pearl millet, give results which enjoin their earliest possible publication that they may reach the farmers for their instruction before the time for the spring planting arrives.

A fair conclusion from these investigations appears to be that there exists but little difference between the various kinds of sorghum as sugar-producing plants, and that the juice of each of them is at a certain period of its development nearly as rich as that of the best tropical sugar-cane grown in this country.

It is a matter also of extreme practical importance that it should be known that this period of maximum content of sugar is maintained for a sufficient time to enable the manufacturer to work up a large crop of stalks. Another result of this investigation has been to satisfactorily explain the cause of repeated failure in the production of sugar from certain plants during the past quarter of a century.

For the purpose of making clear the above points, a few of the results obtained by the chemist are appended. The varieties of sorghum canes subjected to this investigation were "Early Amber," "White Liberian," "Chinese," "Honduras," and "Pearl Millet."

	Development of plant.	Date of analysis.	Per cent of water in stalk.	Per cent of juice obtained.	Specific gravity of juice.	Per cent. of glucose in juice.	Per cent. of saccharose in juice.
Early Amber .....	Seed-head just out.....	July 18	82.70	34.6	1047	3.77	4.43
	Seed hardening .....	Aug. 16	80.07	32.7	1080	1.54	14.67
	Seed ripe, hard, dry.....	Sept. 16	73.20	22.0	1080	0.65	15.95
	After hard frost .....	Oct. 29	69.38	33.3	1088	1.10	17.00
Chinese .....	Seed-head just out.....	Aug. 6	83.99	32.7	1033	5.55	1.85
	Seed hardening .....	Aug. 19	78.77	20.0	1067	5.25	6.45
	Seed ripe, hard, dry.....	Sept. 13	71.27	28.1	1085	1.45	15.99
	After hard frost .....	Oct. 29	69.51	31.0	1076	1.85	18.15
White Liberian .....	Seed just in milk .....	July 26	79.32	35.5	1046	3.50	4.70
	Seed nearly ripe .....	Aug. 26	71.34	29.5	1082	1.40	13.70
	Seed ripe and hard .....	Sept. 27	71.00	21.2	1078	0.95	15.20
	After hard frost .....	Oct. 29	60.66	28.8	1081	2.10	13.69

	Development of plant.	Date of analysis.	Per cent. of water in stalks.	Per cent. of juice obtained.	Specific gravity of juice.
Honduras .....	Seed-head not out.....	Aug. 12	84.00	34.4	1035
	Seed just in milk.....	Sept. 13	77.79	35.6	1055
	Seed hardening.....	Oct. 20	69.39	30.6	1079
	After hard frost.....	Oct. 29	71.42	34.5	1075
Pearl Millet .....	In blossom.....	Sept. 19	76.31	30.0	1035
	Suckering at top.....	Sept. 25	72.00	21.5	1054
	Leaves dying.....	Oct. 14	64.41	20.3	1068
	After hard frost.....	Oct. 29	72.54	22.0	1070
Louisiana Ribbon Cane Plant, 1879 .....		Nov. 10	77.19	.....	1057
Louisiana Ribbon Cane Plant, 1878 .....		Nov. 10	81.77	.....	1070
Do .....		Nov. 10	76.95	.....	1065

Beside the above there were made very many examinations of specimens of sorghum, and also of cornstalks.

These examinations confirm the general principle above stated, the practical equality and great value of each variety of this

In the following table is given the result of the analysis of the plants in four successive stages of development. It will be seen that the amount of glucose (or uncrystallizable sugar) diminishes as the amount of sucrose (or true cane sugar) increases up to a certain point in the development of the plant; that these plants differ widely in the time when the sucrose is at its maximum, but are alike in this respect, that the maximum is obtained at about the same degree of the development of the plant, viz., at full maturity, as indicated by the hard, dry leaves and the appearance of shoots or suckers at the upper joints of the stalks.

It is also to be observed that the heavy frost of October 29, 1879, was sufficient to form ice half an inch in thickness in tubs of water, but did not produce any marked diminution of sugar. Three varieties of cane received from Louisiana in excellent condition, and which fairly represent the average character of this famous sugar-plant, were analyzed and the analyses are embraced in this table for purpose of comparison.

Something over 23 tons of the stalks of corn, sorghum, and cane have been used in making investigations, the result of which will be not only to fully confirm the work of last year, but also to aid in the settlement of certain other questions of the highest practical importance.

In other cases it has been found that the quality of sirup obtained from cane has been precisely such as the previous laboratory analyses would have made probable.

The average of the nine best sirups obtained showed a percentage of cane sugar present equal to 92.7, being a loss of 7.3 of the amount originally present in the juice, while the average of the nine percents containing the lowest percentage of cane sugar, showed a per-

cane sugar present equal to 90.1, a loss of 9.9 of the amount originally present in the juice.

This very satisfactory result, showing as it does conclusively the possibility of securing from the juices all the cane sugar present without a loss of more than 7 to 10 per cent., is of great importance in view of the fact that all these juices were evaporated in an open pan. A few of the experiments made give a reasonable basis for estimating the probable yield of sirup and sugar to the acre, and therefore an approximate estimate of the cost of producing sugar.

Below is the tabulated result of a few of the experiments from stalks grown upon the grounds of the department.

These stalks were grown in rows three feet apart, twelve to fourteen inches in the row, and although a good crop, there is no doubt that upon good land an equal yield to the acre could be readily obtained.

	Pounds stalks from acre.	Sirup obtained.	Sirup, juice at beet.	Sirup, juice, 70 per cent.
Chinese sorghum .....	38,600	2,096	2,397	3,673
Liborian sorghum .....	33,727	2,472	2,009	3,783
Early Amber sorghum .....	32,415	2,100	2,615	3,661
Honduras sorghum .....	66,151	3,652	5,168	7,537
Pearl millet .....	65,000	1,846	3,128	4,865
Field corn .....	27,240	1,166	.....	1,807

The first and second columns give the result actually secured, but the several juices were not in their best condition as compared with the results given in the first table. The third column is the amount which this same weight of stalks would have yielded had they been cut at the proper time. The juice obtained from the stalks by the imperfect means at the command of the department was a little more than one-half of the amount present in the stalks. The fourth column represents the results obtainable by the use of a mill that would have given 68 per cent. of the juice, a result which is possible and claimed as common by the manufacturers of the mills. There is no doubt that when the present industry shall have received the employment of the capital and scientific ability which has developed the beet-sugar industry, even these results, which may appear extravagant to many, will be equaled and probably surpassed.

Although as has been stated these sirups were obtained from stalks in which the maximum content of sugar had not been developed, yet they all crystallized well and yielded an excellent article of sugar.

The sugar has been separated from the Chinese sorghum sirup, which gave 54.7 of sugar, nor from the field corn, which gave 39 per cent. of sugar.

The experiments with field corn are worthy of special notice, since the results secured are not only most surprising, but contrary to almost universal belief.

The corn-stalks were of three varieties, viz., Lindsay's Horn, White Improved Prolific, and White Dent, three coarse-growing field corns. The stalks grew in drills three feet apart and a or ten inches in the row.

The ears were plucked after they had thoroughly ripened; husks were dead and dry; the stalks, however, were yet juicy. The corn was plump and sound and yielded at the rate of 69.1 bushels of shelled corn, fifty-six pounds to the bushel, to the acre. The ears were then topped, stripped, and crushed, and the juice proved to be the best yet obtained from corn-stalks at any period of growth of any variety. It is exceedingly to be regretted that this department did not during the past season an opportunity to try these experiments in a large and practical way of field cultivation which would have been befitting the importance of the occasion. Not less than an acre, or preferably five acres, of each variety of sorghum and maize experiments should be grown and its developments should be watched with the aid of all the appliances of science, throughout the season. If worked up at the proper time with the best machinery attainable, it is hoped that a matter of so much importance will receive serious consideration at the hands of Congress as will enable the department to discharge its duties to the country in this regard.

With the present grounds and laboratory force at the commission department this is impossible. The correspondence upon matters pertaining to the Chemical Division has increased so largely that with the present force it is impossible to give it the attention which it requires. The amount of work which has accumulated in advance of the department to accomplish it shows how promptly and gladly our people will avail themselves of the advantages which a proper enlargement of the department would afford. The legitimate work which has already accumulated and which is mapped out for the Chemical Division would employ the present force for years.

#### ENTOMOLOGICAL DIVISION.

On the retirement of Prof. C. V. Riley, May 1st, the department was fortunate in obtaining the services of Prof. J. H. Comstock, Cornell University, concerning whom the President of the university, Andrew D. White, wrote:

He seems to me in every respect fitted to discharge the duties usefully and service and satisfactorily to yourself. He has most thorough scientific attainments, great energy, pleasant address, excellent temper, and is certainly destined to become a recognized authority in his department throughout the world as he now is in a considerable part of this country. Nothing but a sense of duty to him could induce me to write this letter. \* \* \* As it is, I hope to reclaim him some day. As a man of high temper, relations with scientific people, he is all that could be desired.

It is sufficient to say that Professor Comstock's studies have been eminently fitted for the position, and under his direction the Entomological Division has made notable advance in its appropriate investigations, and the high recommendation of President White has been entirely sustained.



The work of the Entomological Division during the year may be classified under four heads :

1. Finishing the investigation of insects injurious to the cotton plant, begun last year under special appropriation of Congress, and preparing an extended report upon its results.

2. Rearing to the perfect stage new or little known injurious insects for the purpose of gaining a knowledge of their habits and transformations which shall facilitate the suggestion of remedies.

3. The conducting of an extended correspondence relative to noxious insects.

4. The raising of different varieties of silk-worms with a view of experimenting: first, upon the most approved methods of rearing; and, second, upon food-plants, carefully comparing the Osage orange with the different varieties of mulberry. Also the distribution to all applicants.

The investigation of insects injurious to the cotton plant has been completed. Professor Comstock, having been engaged in this investigation from its beginning, was able to take charge of it without material loss of time. A trained observer was sent into the field early in May, where he remained until the middle of September, carrying on extensive experiments upon remedies and clearing up mooted points in the life histories of the cotton-worm and the boll-worm.

Work on this report has been rapidly progressing, and it is hoped and believed that the facts therein contained will enable the Southern planters to render these enemies to their staple crop sources of much less damage than heretofore.

As regards the rearing of new or little-known injurious insects, the division has studied since May 1 the following :

	Species.
Of insects infesting the apple .....	17
peach .....	7
orange .....	5
pear .....	2
grape .....	11
raspberry .....	1
strawberry .....	1
corn .....	3
cabbage .....	3
melon .....	1
tobacco .....	1
grasses .....	9
clover .....	36
pine .....	16
locust .....	15
oak .....	13
maple .....	3
miscellaneous shade-trees .....	15
Museum pests .....	7

Many of these insects are treated of in the annual report of the entomologist. Others will require the additional study of another season,

and the succeeding report will contain accounts of the observations. Insects injurious to agriculture are constantly making their appearance, either through importation or by the sudden acquisition of new habits by species before considered innoxious; hence this branch requires of the division much time and attention.

The correspondence of this division has increased greatly during the past six months, and it is entirely beyond the power of the chief of the division to give that prompt attention to inquiries upon the subject of insects injurious to agriculture that come from all parts of the country.

During the latter part of last winter, twenty ounces of imported worm eggs, the majority from Japan, and the rest purchased from reliable French dealers, were distributed among some fifty persons engaged in commencing silk culture. The reports so far received seem to demonstrate, beyond a doubt, the possibility of the successful cultivation of silk in almost every part of the country. Unskilled persons, with the help and advice of the department, in nearly every instance, have succeeded in turning a large proportion of the worms successfully to the spinning.

Experiments conducted during April, May, and June, 1877, have confirmed the opinion that Osage orange is but little inferior to *Morus* as silk-worm food; and the demonstration of this fact necessarily enlarges the possibilities of the industry in this country.

A correspondent writing from Bengal, India, and who has acquired an apprenticeship at silk raising in that country, with an additional experience of five years in the business, makes a proposition to the department to transport and acclimate the "Tusser" silk worm in the latitudes of this country, to the extent of one thousand pounds of cocoons, at a cost of about \$550,000. This species of worm is indigenous to the province of Assam, in Bengal, where the British Government is giving much attention to silk culture, and is of a hardy nature and most prolific spinner. The writer says: "If America can only give to herself a fair start now in the 'Tusser' industry, she will be enabled to pay by it to her manufacturing revenues." If furnished the means of acclimatizing his favorite "Tusser" worm in America, he thinks success is certain. He adds, "With the Tusser worm fairly fixed in your vineyard, you might snap your fingers at all the silk-producing countries of the world."

While I cannot recommend the beginning of operations on a large scale, the above is cited to give an idea of what persons of industry and experience in other countries are doing in silk culture, and what we may do to establish it here if encouraged. And it is believed that the industry may, by careful procedure, be gradually and economically established in many portions of the United States, with vast benefit to the inhabitants.

An entire reorganization of the entomological collection is now begun. A supply of new cases has been procured, and the collection

being put into such form as shall best insure its preservation and accessibility.

Whenever, during the year, word has been received of any insect irruption of particular interest, an assistant has been sent to the spot to make observations, or a local observer has been employed, to insure a thorough investigation of causes and a more intelligent suggestion of remedies.

In addition to the usual work of the Entomological Division during the next season, a series of experiments will be instituted for the purpose of utilizing the knowledge obtained in applying remedies of various kinds. The results, with all known facts, will be collated into an accessible form for general distribution. This will be a work of considerable magnitude; but it is one which, if well done, will prove of the greatest benefit.

At present, what is known about remedies is scattered through the great number of published volumes and agricultural periodicals. Much of it is doubtless valuable, and much is worthless. It is proposed to critically try, so far as is possible, all of the more important remedies, and to publish in compact form the results.

The habits of and remedies for insects injurious to the orange will be made a special study. The numerous communications received from orange-growers in California and Florida upon this point during the past year have revealed the fact that here is an almost unexplored field to the economic entomologist, and that it is of the greatest importance that some earnest and intelligent work, backed by sufficient means, should be done in this direction at once.

It is designed to resume and continue upon a large scale the biological collection begun in 1876 and discontinued since then, which shall illustrate, when completed, the natural history and habits of all of the injurious insects of the United States; and also to make small biological collections, illustrating our more common injurious insects, for distribution to the agricultural colleges throughout the country, so far as the appropriations will admit.

The division has never been better prepared to do efficient work than at present; but several assistants and an additional clerical force are necessary to meet promptly the increased demands for information.

#### STATISTICAL DIVISION.

The arduous work of this division has been most vigorously prosecuted by the small force now at its disposal.

As will be observed by reference to the detailed report of the statistician, it has a very large and rapidly increasing correspondence, both foreign and domestic.

The number of correspondents is now considerably in excess of four thousand. They have been selected with an eye to their intelligence, experience, and general fitness for the duties which devolve upon them. Most of their communications consist of replies to queries propounded

by the department. These are first verified by the statistician in comparison with the most reliable data attainable from other sources, then classified and arranged in the tabulated form which the numerous accompanying tables present. Those relating to the growing crops were first compiled for issue in the Monthly Bulletin of the department. This is prepared by this division and widely disseminated through the mails and through the daily and weekly press, which are furnished with early copies. These crop reports, and, indeed, all the statistics of this department have become necessary not only to the producers and agriculturists, but also to the middlemen and consumers, and under the untiring and careful supervision of the statistician and his paid assistants, are becoming noted for that accuracy which should characterize all statistical work. The labor involved is not only arduous but of an intricate character. It requires discretion, judgment, and experience. It cannot be intelligently performed by novices, nor will we intrust it to those of careless or negligent habits, because slight errors in the calculations might prove injurious to some of the most important interests in the country. A liberal increase in the force of this division is very desirable. Each addition to the list of correspondents increases the labor of the division and also augments the value of the crop reports in accuracy and reliability.

The frequent applications made to the department for statistical information by agents of foreign governments, by merchants, and members of Congress, have all been promptly met in a satisfactory manner by the facts and figures collected and recorded.

The collection and tabulation of such statistics of European countries as bear on our own markets have been made a subject of special care. The contrast presented as illustrated by these interesting and instructive tables will well repay the study necessary to digest the information conveyed.

Investigations regarding the "wages of labor" and the "value of farm lands" have been instituted and considerable progress made in the prosecution; but, owing to pressure of other duties and inadequate force, the work was necessarily suspended during several months.

As the value of farm lands is largely dependent on the price of labor for their productive cultivation, the average wages of labor become an important factor in successful agriculture as well as in the prospective money value of farms. It is clear that the taxes on the productive farm would soon consume its value. As production is impossible without labor, the cost of the latter becomes a vital problem to the agriculturist. It will be possible to pursue these investigations in a more thorough manner, and lay the results before the country in such a way as will, it is believed, be productive of many benefits, if the bill entitled "A bill to encourage inter-State migration," introduced by Hon. W. F. Sapp, of Iowa, at the second session



Forty-fifth Congress, and which, so far as known, was warmly approved of by members of Congress, shall become a law.

The report of crops for the year presents the same gratifying aspects as that of last year. Although the yield per acre in some instances is below that of 1878, the increase of area more than compensates for the declining average. As a whole, the wheat crop of the country is unprecedented in yield, being within a small fraction of fourteen bushels to the acre. The increase in area, some 2.3 per cent., is not so large as that reported last year. In the great wheat-growing States of the Northwest the same climatic influences that were so detrimental in 1878 were again felt this year, and the yield per acre in these States the present year shows little variation from that of its predecessor; while in the States contiguous to and bordering upon the Ohio River, but in which winter-sown wheat prevails, there was an extraordinary product. In the State of Indiana the yield was increased from sixteen bushels per acre to twenty and three-tenths. In fact, the crop in all the country was above the average, except in Texas and Kansas. California had a good crop, but not as large as in 1878. The acreage of corn was increased this year about three per cent. Drought in the South Atlantic and Gulf States was detrimental, but in those States bordering on the Ohio and Mississippi Rivers the season was favorable, and the yield was very large. The total product of corn in 1879 is some two hundred million bushels more than in 1878. This result is remarkable, as it is the fifth consecutive year of abundant crops.

The cotton crop, which is so important in its bearing on the prosperity of the country, because it furnishes one of the chief articles of foreign export, shows a slight decline from the yield of last year. As compared with 1878, which was the year of the largest production, the deficit will be, in round numbers, 290,000 bales.

In the product of other important crops there is no material change, except that the short yield of potatoes in 1878 is replaced this year with a full crop. Full details of the aggregate production of each of the principal crops, together with area planted and the estimated value of the same, will be found in the statistician's annual report.

His tables afford much general information useful to the thoughtful farmer in the handling and marketing of his crops. The average-price table, showing the difference in value between the market nearest his farm and in New York, Philadelphia, Baltimore, and Boston, acquaints him with the average cost of transportation, insurance, and commission from the point of production to that of consumption. The wages table is very instructive. It shows that ordinary farm-labor commands most in New England, where education is universal, and the laborers are consequently intelligent. This advance may be considered a premium on intelligence. In the South and West, while farm-labor is lower, being generally uneducated, that of the intelligent mechanic is considerably higher than it is in New England. This again may be considered

a premium on educated labor where that commodity is scarce. A full examination of the wage-tables and of the price-list of breads and provisions in the different sections of the country will enable us to determine where toil is best rewarded, after deducting the cost of subsistence.

#### BOTANICAL DIVISION.

The following inquiries concerning the botanical collection of the Department are sometimes made: What are they? What are their needs? And what are their needs?

The botanical collections consist of prepared specimens intended to represent every species of plant, shrub, or tree growing in the United States, and to some extent, also, the vegetable productions of foreign countries. They include also definite and authentic specimens from forest woods and the more important fruits, cones, and seeds. The foundation of this herbarium was laid by the numerous collections made at different times by the government expeditions, as the expedition to Japan under Commodore Perry; the North and South Pacific expeditions, Commodore Wilke's expedition, the Mexican boundary survey, and the Pacific Railroad surveys.

The botanical collections made by most of these expeditions, and properly investigated and described by those distinguished American botanists, Doctors Torrey and Gray, were deposited with the Smithsonian Institution until the year 1869, when an arrangement was made between the Secretary of that Institution and the Commissioner of Agriculture by which the botanical collections were transferred to the Department of Agriculture, and committed to the care of a properly-qualified botanist connected with the department.

This arrangement was entered into for two purposes: first, the Agricultural Department needed the services of a botanist to give answers to critical questions which were continually arising as to the natural qualities of certain plants which attracted the attention of agriculturists in various parts of the country; and, secondly, the large and important botanical collections of the Smithsonian Institution could not be made practically useful without the employment for a number of years of a competent botanist to arrange and classify them, and to make them available for purposes of study and reference. The opportunity thus presented itself of uniting the practical wants of the Department of Agriculture with the interests of science and education fostered by the Smithsonian Institution.

Since the transfer above mentioned large additions have been made by the recent government surveys, by some purchases, and by exchanges with foreign governments. The herbarium has been removed to more commodious rooms, and many new cases have been provided, so that all the specimens are easy of access and measurement and displayed.

This collection, like all museum collections, has an educational character. The rooms of this division are visited by thousand of persons, who have the opportunity of examining the vegetable productions of the country, and to some extent comparing them with those of other countries. Very few of these visitors will fail to gather some items of information which will be a source of pleasure and instruction to them, will be diffused by them, and thus have a beneficial influence on the popular intelligence.

The department receives from foreign nations by way of exchange and otherwise many valuable specimens of woods and plants, which are arranged, verified, and classified by the botanist of this division; duplicates are distributed to State agricultural colleges and other institutions of learning, not only of these, but also of American forest woods. These distributions have been highly appreciated, and are useful in promoting the higher education which is demanded by the times for intelligent agriculture.

This botanical collection has also a special scientific value. It is the custom of all enlightened countries to collect at government centers specimens of the productions of the country, both for practical purposes and for the promotion of scientific knowledge. These museums and herbariums bring together a vast mass of material which men of science investigate and classify, and add to the stock of human knowledge.

Though much of this knowledge may be technical, and useful chiefly to specialists, it is necessary to the full development of those sciences which have so greatly advanced the culture and prosperity of mankind. It is hardly necessary to say that it is the duty of the government to advance the interests of education and science; and assuredly there is no other department of the government where botanical science can be more appropriately fostered and cared for than the Department of Agriculture. Here is the place where information respecting every vegetable production of our vast country should be obtainable. Among the thousands of visitors to the national capital are those who are interested in education and science, who will gladly avail themselves of the opportunity here offered to examine the productions of the entire country and foreign states.

Although much of the botanical material is special and scientific, it should not be forgotten that it is the special knowledge of the botanist which enables him to make those critical determinations respecting species, and respecting the nature, properties, and value of the plants, some of which are supposed to have valuable medicinal properties, some which demand investigation on account of their injurious or poisonous qualities, others for their economic value as fibers, cordage, or food, and still another large series of inquiries respecting the native grasses of different parts of the country and their respective worth for cultivation by the farmer and stock-raiser.

During the last four or five years there have been no botanical col-

lectors on the government surveys, and consequently our most means of acquiring knowledge of the vegetation of the West territories has been cut off. As has been stated, in this department complete information should be obtainable respecting the productions of all parts of our country. As explorations are carried forward into remote sections, and new portions of our territory brought under the influence of civilization and cultivation, new plants are discovered, and this division should have the means of keeping up with the progress of discovery, if not of itself extending to new discoveries.

There are certain portions of our country, notably Oregon and Washington Territories, regarding the vegetation of which this division is very deficient as to information and specimens, and means are much needed to place a good botanical collector in the field in these regions in order to supply these defects. We have mentioned the distribution of wood and botanical specimens which have been made by this division. There is a large field in this direction in which this division could greatly facilitate the advancement of intelligent agriculture. The young men who are now being educated in our Agricultural Colleges should have some knowledge of the prominent vegetable productions of the different parts of the world, and this knowledge can be most easily obtained by inspection and study of the objects themselves as they are presented in the museum and herbarium. This department should have means at command to aid these institutions in this higher agricultural education. Very few young men in our eastern colleges are acquainted with the cotton-plant, rice, or sugarcane, even as they should be represented in museum specimens.

This department should be made a center of diffusion for the knowledge of other objects of agricultural or economic interest.

It is not necessary to go into details respecting our immense forest wealth, in its variety of 400 species of forest trees, nor to a consideration of the wants of a system of forest conservation, but we know that this subject properly comes within the domain of this department, and that both scientific and practical talent should be employed in its management.

A very creditable beginning has been made in our grounds in establishing an arboretum, in which should be presented in a living state specimens of all the trees and shrubs of this country which can be grown in our climate. But the enlargement of this arboretum has been suspended for several years on account of a want of means to provide for the small necessary outlay. The wants and interests of the agricultural community could be greatly promoted if this division could keep in the field more intelligent and capable botanical collectors, who would be able to obtain and send forward specimens of trees, shrubs, seeds, and fruits, so that here at the national capital there might be a full representation of the vegetable productions of our country.



## MICROSCOPIST.

In addition to answering the numerous correspondents, both in this country and in Europe, the microscopist has during the past year made a number of original investigations in relation to the best methods of destroying insects and cryptogamic plants which prey on vegetation.

He has also made microscopic examinations for the different divisions of the department. An illustrated paper on the subject of edible mushrooms found growing in great abundance in the United States has been prepared, and will be published the coming year if funds for that purpose can be obtained. A number of microscopic specimens of morbid tissues for photographic illustrations accompanying the report on the diseases of domesticated animals were also prepared by the microscopist.

He has also made investigations relating to the fungus of cotton bolls, measurements of starch granules of sago, causes relating to sweet-potato rot, yellows of the peach, of the fungus known as *Rasotera lacerata*, found growing on the leaves of the Russian apple-trees in the department grounds, &c.

## SEED DISTRIBUTION.

Resolutions of granges and other agricultural organizations, letters from all parts of the country, favorable comments of newspaper editors, and last, but not least, the hearty indorsement of very many members of Congress to whom seed distribution had become an onerous burden, leaving them little time to give to their duties as legislators, and proving an endless source of annoyance and loss of popularity, indorse the action of the department in the matter of distribution of seeds according to the law, which directs the Commissioner of Agriculture to distribute seeds to agriculturists.

Through the four thousand regular correspondents and through information obtained from other citizens of the different counties, as well as from the prize lists and reports of county and State fairs, lists of the best farmers, numbering at the present time from ten to twenty in each county, regardless of political faith or anything else but their standing as farmers, have been obtained and entered on our books, and to some of these individuals, as well as to the agricultural societies in those counties, new and valuable seeds adapted to the localities are sent for experimental purposes.

While the limited amount appropriated for the purchase and distribution of seeds will not suffice for distribution to all the farmers on our books during any one year, yet something new will be sent to each county in the United States, and with diligence on the part of the recipient to cultivate and save seed and distribute among neighbors, any new or improved variety of grain or roots can soon be spread over any given county. The advantages arising from the introduction of improved varieties of seed are better understood by considering the effect in the increased production per acre. The area cultivated in wheat in

the United States aggregates in round numbers thirty-five million bushels. An increase of one bushel per acre would give an addition of thirty-five million bushels of wheat to the crop. This is equivalent to \$1,750,000. Taking the past six years as a basis of calculations, the increase in production per acre averages 1.2 bushels per acre for the last six years, being equivalent to a gain of \$54,220,929 per annum in that time. The number of acres annually in oats in the United States during the last six years averages 11,987,626 acres. The increased production per acre by the introduction of the "Excelsior White Schoenen" oats since 1873 was some 2.5 bushels per acre, and a like increase in the production of wheat from the distribution of the "Board of Trade" oats in the northern part of the country and the "Rust Proof" in the southern part of the country in the last two years. At the same time the acreage was augmented by one and a half million acres. But the average increased yield of wheat and oats tributary in like period to improved varieties of seed would be worth forty million bushels, worth \$15,000,000. Such substantial advantages speak so eloquently in behalf of proper seed distribution that any further remark would be superfluous.

The following tabular statement exhibits the quantity of seeds distributed to each State during the past year, except in the miscellaneous column, in which it was found impracticable to describe the seeds by State. It is proper to say, however, that the system of keeping seed accounts has been so changed as to show hereafter the quantity of all the seeds distributed. It will be seen that a marked improvement has been made over former years, the number of packages distributed has been increased by nearly half a million over that of the preceding year.

*Tabular statement showing the quantity and kind of seeds issued from the Department of Agriculture, under the general appropriation act, from June 30, 1879, inclusive.*

Kinds of seeds sent.	Varieties.	Packages.	By request of Senators and members.	Agricultural societies.	Statistical correspondents.	Granges.	Special farmers.	Miscellaneous.
<i>Items.</i>			<i>Papers.</i>	<i>Papers.</i>	<i>Papers.</i>	<i>Papers.</i>	<i>Papers.</i>	<i>Papers.</i>
Vegetable-seed.....	189	Packages	336,240	27,260	115,265	404,000	241,360	14,120
Flower-seed.....	33	do	39,774		49			3
Tobacco-seed.....	5	do	19,353				11,918	
Opium poppy.....	1	do	31					
Tree seed.....	31	do	460	50				1
Herbs.....	19	do	658					
Borago.....	1	do	20					
<i>Field seeds.</i>								
Wheat.....	11	Quarts	5,853	5,792	13,324		25,240	1
Oats.....	5	do	3,085		5,872		14,120	
Barley.....	12	do	1,475	96	428	1,424		
Rye.....	1	do	258					
Buckwheat.....	1	do	47					
Field corn.....	1	do	660					
Potatoes.....	3	do	1,437	720	3,416	484	4,244	
Artichoke.....	12	do	1,197	1,022	1,623	3,259	3,821	
Sugar-beet.....	2	do	76				314	
Sorghum.....	1	do	2,124				30	
Grass-seed.....	3	do	729				20	
Clover-seed.....	1	do	105					

*Tabular statement showing the quantity and kind of seed issued, &c.—Continued.*

Kinds of seeds sent.	Varieties.	Packages.	By request of Senators and members.	Agricultural societies.	Statistical correspondence.	Granges.	Special farmers.	Miscellaneous applicants.	Total amounts.
<i>Field seeds—Continued.</i>			<i>Papers.</i>	<i>Papers.</i>	<i>Papers.</i>	<i>Papers.</i>	<i>Papers.</i>	<i>Papers.</i>	
Millet .....	2	Quarts.....	253					1,155	1,408
Rice .....	2	do .....	119		2,288		1,086	486	3,979
Chufa .....	1	do .....	212		1,978			358	2,548
Vetches .....	1	do .....	6					6	12
Doura .....	1	do .....	7					33	40
Pea-seed .....	1	do .....	63				200	536	958
Broom-corn .....	1	do .....	40		762			158	906
Coffee-seed .....	1	do .....						104	104
Beggar's Lice .....	1	do .....						2	2
Comfrey .....	1	Roots .....	20					83	103
Mushroom .....	1	Baskets.....	84					21	105
<i>Textiles.</i>									
Cotton .....	1	Quarts.....	110		1,372			713	2,195
Hemp .....	1	do .....	15		162			18	195
Flax .....	1	do .....						31	31
Ramie .....	1	Papers.....	2					93	95
Total.....			414,550	34,940	146,530	409,280	302,408	238,030	1,545,739

#### VETERINARY DIVISION—DISEASES OF DOMESTICATED ANIMALS.

Investigation of the diseases of domesticated animals instituted and conducted under the direction of the department has not been entirely confined to diseases of a purely infectious and contagious character, but embraced others of a well-known malignant and fatal nature. While the facts and information elicited are of the most interesting and important character, much yet remains to be positively determined before the work can be regarded as complete. The most valuable point thus far settled is that the disease so long known throughout the entire length and breadth of the country as "hog cholera" is a disease accompanied by few choleraic symptoms, is a purely infectious and contagious malady, and is communicated from one animal to another as all such diseases are, either by inoculation or by contact. This being the case, notwithstanding no remedies have as yet been discovered, the annual losses resulting from the malady among this class of animals will be greatly lessened by the measures taken by farmers and stock-raisers to prevent the communication of the disease from affected to healthy herds. Indeed, the good results of this investigation have already been felt in a marked degree, as the correspondents of the department report a great diminution of the disease during the past summer as compared with previous years.

In most cases this is attributable to better care of the animals, and to such precautionary and preventive measures as have been advised by those who have had charge of this investigation. In no respect has the fatal and destructive character of the disease changed, but it has been less widespread and general than in former years. It is confidently hoped that the experiments now being conducted under the direction of the department, and which are in charge of able veterinary surgeons,

will result in the discovery of either a remedy for this terrifying disease, or establish such measures of a sanitary and preventive character as will confine it to very limited localities. The disease proved more destructive than any malady heretofore known to any other class of domesticated animals in this or any other country. It has prevailed in the United States for nearly a quarter of a century, and while, perhaps, it has not increased in fatality, the losses occasioned through its instrumentality have increased in a like ratio with the increased number of animals produced, until the aggregate now reaches many millions of dollars. Careful returns from the commissions of the department show these losses to be at present from \$1,000,000 to \$20,000,000 annually. It is, therefore, not unusual to receive intelligence from some of the large hog-growing localities in the West that losses in single counties will reach the large sum of from \$50,000 to \$80,000, and in some instances as high as \$150,000 in one year, through the devastating operations of this disease. Neither is it a rare occurrence to be informed of the loss of an entire herd of apparently healthy hogs within thirty days after the disease has made its appearance among them. The returns of the Statistical Commission of this department show the number of hogs produced last year upward of 32,000,000 head. This number is greatly in excess of any other class of meat-producing animals reared in this country, and shows the great necessity for the discovery of measures for their protection from disease. Millions of dollars are involved in the trade, but it is not alone the heavy losses annually sustained by the farmers that should claim our attention in a consideration of this subject. The fact of the existence of a terribly destructive disease among the swine of this country has already reached many foreign markets, and our salt and smoked meats have been prohibited from sale at ports where the business has heretofore been routine. While it has not been shown that the disease known as hog cholera can be communicated to man, at least in a fatal type, a diseased animal is fit for food, and it is a notorious fact that entire herds of swine are slaughtered as soon as the disease is suspected to have made its appearance among them, and their meat is thrown upon the market for sale and ultimate consumption.

Equally alarming, and, unless effectual measures are at once taken, to stay its further progress, equally disastrous to the material interests of the country must inevitably prove the disease known as pleuro-pneumonia among cattle. In the early history of my management of the affairs of this department I called the attention both of the people and of Congress to the fact of the existence of this dreaded and deadly contagious disease in several of the Eastern seaboard States, and expressed the fear that it might be speedily transported to the great ranges of the West, where, when once located, it would be found impossible to eradicate it. The agitation of the subject was contin-



several of the States where the disease was found prevailing inaugurated measures for its suppression. Their efforts were but partially successful, the failure being attributable alike to the insufficiency of the appropriation made for the purpose and a proper concert of action among the States immediately interested. Upon investigation, the disease was found prevailing, principally among dairy cattle, in the States of Connecticut, Eastern New York, New Jersey, Pennsylvania, Delaware, Maryland, the District of Columbia, and Virginia.

In New York City and vicinity the disease was found to prevail to a most alarming extent, and the legislature of that State at once adopted measures providing for its speedy suppression. A corps of able veterinary surgeons were employed, who commenced their work with an energy that gave promise of a speedy suppression of the disease by the safest and only effectual method, *i. e.*, by the condemnation and immediate slaughter of all animals suffering with or infected by the malady. A large number of animals were condemned and slaughtered, but it was soon found that the appropriation made for this purpose was insufficient, and the work had eventually to be suspended for the want of means to carry it forward.

This was much to be regretted, for, however carefully precautionary measures may be observed, until a further appropriation can be made it will be found almost impossible to confine the disease to the limits it occupied when the work was thus summarily suspended.

Partial efforts for the suppression of the malady were also made by the States of New Jersey and Pennsylvania, and possibly one or two more of the infected States, but these efforts were not prosecuted with that energy and determination that characterized the work inaugurated by the authorities of the State of New York. Where the work of suppressing diseases of this character is undertaken by the States separately and individually many difficulties will be encountered, and some of them will be found almost impossible to surmount or overcome. Unless there is perfect concert of action and entire harmony of purpose on the part of all the States interested, but little good can or will be accomplished in the end. The authorities of New York, by wise and energetic efforts and the expenditure of large sums of money, may extirpate the disease within its own borders, but so long as it is allowed to exist in contiguous States it is liable any day to be carried again over the borders and into the herds from which it has just been eradicated.

#### GARDEN AND GROUNDS.

The chief object of the garden of this department is the propagation and development of plants that are likely to prove of general utility.

The area devoted to this purpose is entirely inadequate.

The department cannot do justice to itself or the country until experimental grounds here and in different sections of the country are placed

at its disposal. There are many semi-tropical productions of merclial value, which can now only be treated in a limited way. Hot-house plants, which they practically are in this Island, consequently placed under conditions for propagation, which limit their quantity but depreciate their value.

There is pressing necessity for increased facilities for cultivation to test the practicable cultivation of such plants as the arund, banana, pineapple, coffee, tea, theobroma or chocolate, especially the bergamot or otto yielding plants, ginger, pepper and many others of commercial value. There are sections of the island whose climate will admit of the propagation of these plants in air, in which the cost of production may be put to a practical test, the absence of means to provide these facilities, the department is impossible to fully discharge the primary duties with which it is in the act establishing it, viz., - to test by cultivation the value of seeds and plants as may require such tests, to propagate such plants worthy of propagation, and to distribute them among agriculturists.

Time and again it has been asserted that coffee was found wild in Florida, but an examination of the bush and berries by a botanist of the department has resulted thus far in disproving the assertion.

I have, however, within the past few days been informed by Governor Gleason that he himself had seen coffee growing wild on Cayne, that he had picked the berries, and that a grant of land had been made to a company to induce them to plant coffee on the peninsula.

The reason does not appear why this enterprise was abandoned it was long years since, and the record and men attempt have been almost forgotten.

Accurate botanic information will now soon be obtained, and as it is growing on Cape Biscayne the fact will be established.

## COFFEE.

Whether there is any part of the United States in which coffee can be cultivated has been a question discussed for years and undetermined. A practical solution of this question has at last been reached by Mrs. Julia Atzeroth, of Braden Town, Manatee County, Fla. She has sent to the department a branch of coffee grown in the soil of her garden. In her letter accompanying the coffee, she says:

Gen. W. G. Le Duc,

Commissioner, Washington, D. C.:

DEAR SIR: Yours of the 20th of last month arrived safe, and I can assure you I was greatly honored to find that you appreciate my experiment in growing coffee. I feel sure that mine should be the only coffee in the United States. I feel sure it will be successfully grown further south where frost never comes, and there is an

land and soil suited to its growth. My trees are now attracting considerable attention. Many persons have come to see them and ask for seed.

I have given some seed and I will try to encourage its cultivation, to improve the country thereby. That is why I tried it, and now I feel satisfied it will be a success, if fairly tried. I came to this State some thirty years ago, and am one of the first settlers in Manatee. I would like to see you and tell you my experience in Florida. I would not exchange my home for any other State I know of. Florida needs nothing but energy and industry to make its people independent.

The department has supplied Mrs. Atzeroth with a number of young trees with which to enlarge her experiment, and also furnish other persons in the same locality and further south with plants which should, if carefully planted and successfully cultivated, bear coffee within five years.

It is something to know that a lodgment has been effected on the coast of Florida, and though four trees, so far, are known to have been successfully grown and fruited, yet whether the coffee will ripen thoroughly and prove as profitable here as it has in other countries is yet to be determined.

#### TEA.

The efforts of the department to introduce the culture and manufacture of tea have been steadily continued and with a fair prospect of ultimate success. Of the 69,000 plants distributed last year, the reports indicate a loss of about one-half, owing to carelessness and failure to protect them from the hot summer sun; but the applications of the farmers are numerous and the distributions of the department during the fall of 1879 and spring of 1880 will be continued.

The kaki, Spanish chestnuts, English walnuts, olives, camphor-trees, and other plants and vines distributed the past year are uniformly reported upon as thriving and doing well.

There have been distributed from the garden during the past year, 28,000 strawberry-plants, 9,748 grape-vines, 69,154 tea-plants, 13,921 plants of orange, olive, fig, and semi-tropical fruits and plants of various kinds, 5,000 plants of Japan persimmons, 70,000 scions of Russian apples.

A letter from an intelligent correspondent, Mr. Weaver, of Bogota, South America, whose opportunities of observation have been ample, and whose opinions upon the cultivation of coffee and cinchona are entitled to considerate attention, is produced in the appendix for the encouragement of those who are inclined to help the department to make this interesting experiment.

The clerks and working force of the department, under the able direction of the chief clerk, have accomplished an unusual amount of valuable labor; but if the force of the department were doubled every year for the next five years it could be employed with great profit to the country.

The following table exhibits in a condensed form the appropriations

made by Congress for this department, the disbursements pending balance for the fiscal year ending June 30, 1879:

	Amount appropriated.	Amount disbursed.
Salaries.....	\$66,900	\$66,900 00
Collecting statistics.....	10,000	10,000 00
Purchase and distribution of seeds.....	75,000	75,000 00
Experimental garden.....	7,000	7,000 00
Museum and herbarium.....	1,000	1,000 00
Furniture, cases, and repairs.....	4,000	4,000 00
Library.....	1,000	1,000 00
Laboratory.....	1,500	1,500 00
Contingent expenses.....	8,000	8,000 00
Postage.....	4,000	4,000 00
Improvement of grounds.....	6,500	6,500 00
Printing and binding.....	11,000	8,073 50
Investigating the habits of insects, &c.....	10,000	10,000 00
Investigating the diseases of swine, &c.....	10,000	10,000 00
Erection of stable.....	1,500	1,500 00

For the purpose of comparison, the amounts appropriated to various departments of the general government for the fiscal year ending June 30, 1879, is herewith appended.

Object of appropriation.	Amount.
Congress.....	\$1,000,000
Executive proper.....	1,000,000
State Department.....	1,000,000
Treasury Department.....	1,000,000
War Department.....	1,000,000
Navy Department.....	1,000,000
Interior Department.....	1,000,000
Post-Office Department.....	1,000,000
Department of Justice.....	1,000,000
Department of Agriculture.....	1,000,000
Total.....	\$3,000,000

#### IMMEDIATE NECESSITIES OF THE DEPARTMENT.

The immediate necessities of this department, beyond the appropriations usually made for its ordinary working, may be stated:

1. A laboratory of proper size and fully equipped, to cost not less than \$300,000, with a sufficient appropriation to meet the expenses of an additional force that will be necessary to carry forward investigations on a larger scale than the present laboratory and appliances warrant, and the further sum of \$5,000, made available immediately for labor and material necessary in the pressing work of this division.
2. A farm of 1,000 acres of ground, in the neighborhood of this city, and five experimental stations in different parts of the country, viz., one in California, one in the interior of the West (to be devoted to the introduction and preservation of the best breeds of domesticated animals and to the domestication of some of the wild animals of the country, among them the Buffalo), one in



in Florida, and one in New York above the latitude of Albany. To inaugurate these farms a large sum will not be necessary, and after the first year the expense will be more than paid by the results of the cultivation at each station.

3. An increased appropriation for the gardens and grounds of the department, which embraces experimental cultivation and propagation of trees, plants, &c., for distribution. This appropriation should be increased to at least \$15,000.

4. An increased appropriation of \$5,000 for obtaining new material, employing labor, and otherwise extending the benefits arising from the museum and botanical divisions of this department.

5. A renewal of the appropriation of \$10,000 for the examination of the diseases of domesticated animals.

6. A renewal of the appropriation for continuing the investigation of the history and habits of insects injurious to agriculture. Ten thousand dollars at least should be annually expended in that direction by the department.

7. An additional appropriation of \$6,000 to continue the work on forestry.

Permission and direction to occupy and plant on the government land on the Coteau d'Prairie, a forest conforming to the width of the coteau and extending the entire length of the elevated land from the northern end near Bigstone Lake toward the Iowa line.

A re-establishment of the forest which once grew on this elevated land would increase the value of the government land far beyond the cost of planting, and can and would also afford an opportunity of ascertaining the meteorological and other beneficial changes that would probably take place in consequence of the establishment of so large a body of timber crossing the path of the severe storms that sometimes sweep with terrible energy and devastation across those naked plains. The lands are owned by the government, and they can be reserved from sale for this purpose. The experiment need not be an expensive one, nor can there be any doubt about the favorable result even as a profitable investment.

The same thing should be done in the middle plains, commencing at the South Park and running southeast. With these two experimental forests many questions now discussed could be settled, and much knowledge of a most interesting and valuable character could be furnished to the people.

A tract of country at the foot-hills, on the east and west side of the Rocky Mountains, usually considered an arid desert, and estimated to be equal to nearly one-fifth of the productive area of the United States, when irrigated, has been found to be astonishingly productive, especially for all the cereals that are commonly used for the support of human life.

The inadequacy of the streams which run from the mountains into these plains and irrigate the country, the excess of the population of

the mines which demands more food than can be raised upon that are irrigated from these streams, and the general welfare section requires that the government should take some active measures in ascertaining whether by artesian wells in different locations large portions of the country may not be profitably watered and made productive. The experiments recently made by the French engineers in the deserts of Africa are well worthy of imitation in this country and it would seem practicable. As preliminary to more extensive operations, an appropriation of \$50,000 to be immediately available should be made to examine with the drill the practicability of irrigating artesian wells.

A building for the exhibition of working models of agricultural machinery is a want long felt, and which would be of the highest value and instruction to all persons visiting Washington from all parts of the United States and from foreign countries. Such a collection of models made, if the building was furnished by the government, with very little expense. Nearly every manufacturer of agricultural machinery would be glad to contribute a specimen of the tools or implements manufactured. This building should occupy the southwest corner of the grounds. It should be of sufficient extent to provide for some years in the future. It should form part of the permanent building which the department necessarily require.

In every county in the United States in which agricultural experiments are pursued, this department has or aims to have a principal correspondent and four assistants. These should all be furnished with scientific instruments for taking the temperature of the air, the soil, the water, and the atmosphere, and the degree of moisture present in the atmosphere. As the work of these correspondents is given gratuitously, the government ought to supply the instruments necessary for making the observations, and an appropriation for this purpose, and for furnishing books and other stationery, should be made.

Very respectfully, your obedient servant,

WM. G. LE DU  
*Commissioner of Agriculture*

**The PRESIDENT.**

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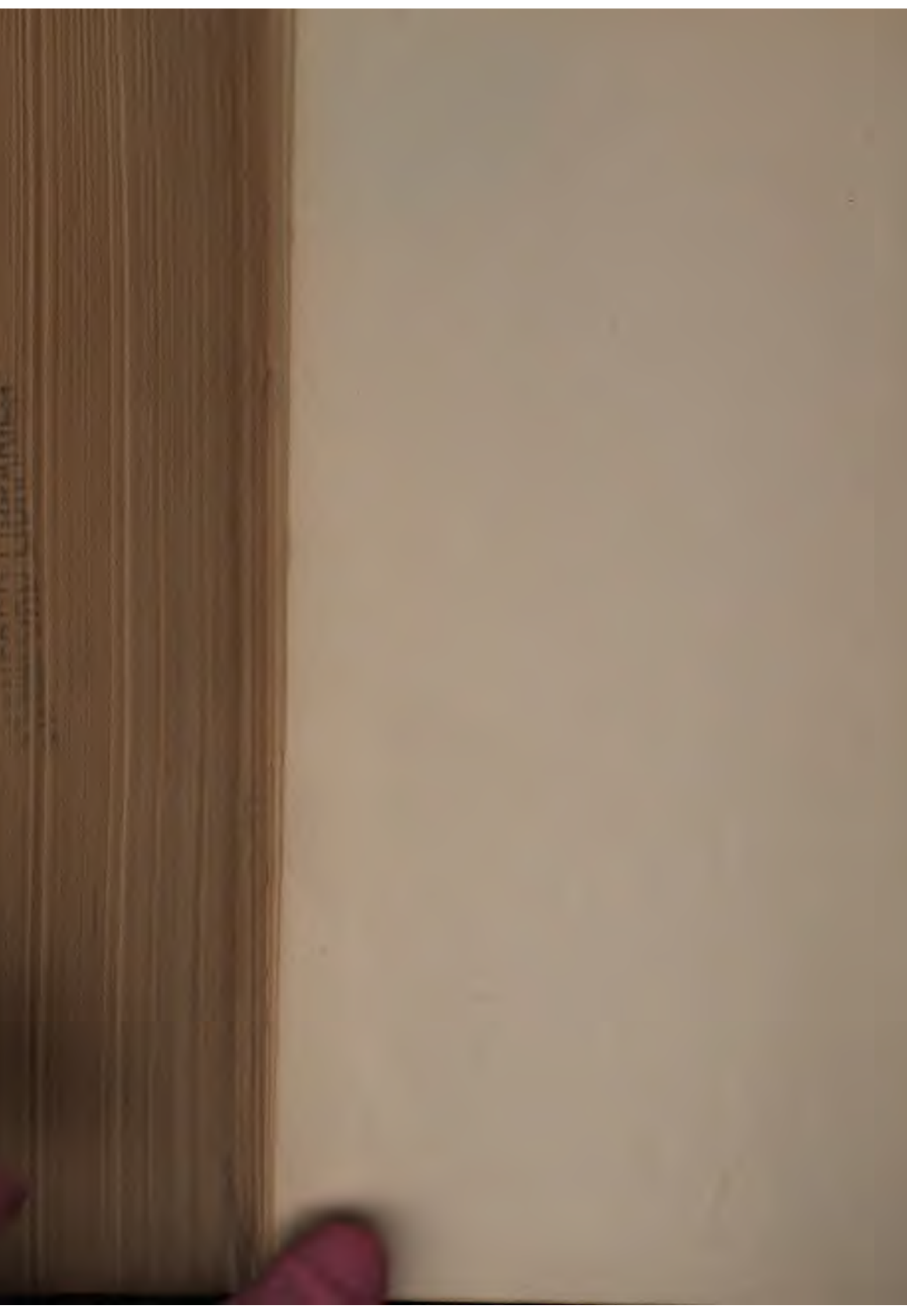


















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